

INFLUENCERS OF ACADEMIC EFFORT:
A QUANTITATIVE STUDY OF 10TH GRADE STUDENTS

A Record of Study

by

NICOLE LYNEA POENITZSCH

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|------------------------|----------------------|
| Chair of Committee, | Mario S. Torres, Jr. |
| Co-Chair of Committee, | Roger Goddard |
| Committee Members, | Jean Madsen |
| | Ben Welch |
| Head of Department, | Fredrick M. Nafukho |

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ABSTRACT

As demands of education increase, reforms have fallen short of affecting the levels of advancement desired relative to student achievement and attainment. Present reforms, while positively affecting improvements in class size, teacher quality, instructional practices, technology, and fiscal resources have marginalized the notion that in order to learn more, students need to work harder. The intent of this study was to determine if there are relationships between levels of academic effort, academic efficacy, and belief in the meritocracy of the process of education for secondary students. Research procedures included exploratory factor analysis to extract proxy measures for academic efficacy, belief in the meritocracy of education, and academic effort from the survey items available on the Base Year 2002 Student Questionnaire designed and administered by the National Center for Educational Statistics as part of the Educational Longitudinal Study of 2002. The sample population included 15,325 tenth grade students from 752 schools who participated in administration of the student questionnaire in accordance with the design guidelines established by the NCES. Multiple regression analysis was used to determine existence of linear relationships between academic effort, academic efficacy, and belief in the meritocracy of education, while controlling for characteristics of race, gender, socioeconomic status, and the interaction between academic efficacy and belief in meritocracy of education.

This study is grounded by Albert Bandura's (1977) social cognitive theory and his successive works on the agentive role of efficacy relative to moderation of action.

Application of the regression model generated for this study produced standardized betas of .435 for both academic efficacy and belief in meritocracy relative to academic effort. The overall levels of academic efficacy, belief in the meritocracy of education, and academic effort measured by tenth grade students' responses to the selected survey items were relatively low. However, the regression model employed accounted for approximately 60% of the variance observed in levels of academic effort. The selected control variables of race, gender, socioeconomic status, and the interaction between academic efficacy and belief in the meritocracy of education demonstrated weak relationships with academic effort that were not significant relative to practical impact. Gender and African American Race were the only two control variables that produced statistically significant relationships relative to academic effort. However, each produced negligible impact relative to effort with gender revealing a standardized beta of .090 for gender and .022 for African American Race. The control variables accounted for approximately two percent of the total variance explained by the model employed in this study. The directionality of some of the relationships depicted between the referenced control variables and the variables of academic efficacy, belief in the meritocracy of education, and academic effort lend themselves to further investigation. The findings of this study provide for the conclusion that there is a positive and statistically significant linear relationship between academic effort and academic efficacy, and between academic effort and belief in the meritocracy of education while race, gender, and socioeconomic status are only weakly related and yield a non-significant impact on academic effort.

DEDICATION

To my husband, Kevin, for your patience and the perseverance of your love for our family and me.

To my children, Ava, Kade, and Kolt-I hope that as we grow you continue to be as proud of me as I am of you. *“To you I wish to give two things: to give you roots, and give you wings.” – Hodding Carter*

To Susan, Jennifer, Kayley, and Debbie- it has taken the dedication of many in order for me to be able to reach this accomplishment. Thank you for your support and for lovingly taking care of my children when work and school pulled me away.

To Granny, Papa, Momo, and Popo-thank you for providing me with the security and stability needed to find my wings.

To my dad, Eugene Joseph Bubela, Jr. (1955-2013). I have not yet healed from the unexpected loss of my wonderful father. To him I am eternally grateful for the humbleness and work ethic that he instilled in me and the examples of love, forgiveness, patience, and perseverance that he demonstrated every moment of his life. I will continue to spend my life striving to be a reflection of the person that he was and a daughter that he would be proud of.

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CHAPTER I

INTRODUCTION

At the 2013 Texas Association of School Administrators Mid-Winter Conference, hosted in Austin Texas, Dylan William-Emeritus Professor of Educational Assessment and Deputy Director at the Institute of Education, University of London, presented premises for preparing students for a world we cannot imagine. In his introduction, William (2013) summarized four primary purposes of education: 1) cultural transmission, 2) preparation for citizenship, 3) preparation for the world of work, and 4) personal empowerment. A wealth of research has emerged to understand, scrutinize, reform, and revise educational policies and practices relative to each of these purposes. Tracking the trends of educational reform in the United States reveals a recent emphasis on the purpose of preparing students for a globally competitive world of work.

Twenty-five years after the publication of *A Nation at Risk* (National Commission on Excellence in Education, 1983), the U.S. Department of Education published a document titled *A Nation Accountable* (2008). The latter conveys that efforts in education have concentrated on areas such as teacher quality, time, leadership, finances, curriculum, and standards of expectation to raise levels of academic achievement. However, the data shared in the report indicates that gains have not been made in NAEP math and reading scores between 1978 and 2004 (p. 4) though expenditures per student during that same time frame increased on average from \$5,896 to \$9,116 (p. 8). The conclusion drawn is that while systems of accountability are in

place to promote transparency into areas of deficit and difficulty, effective practices to promote improvement continue to elude the system.

Educational reforms have historically emerged in the shadows of nationally significant events such as the launch of Sputnik in 1957, the publication of *A Nation at Risk* in 1983, and the introduction of the *No Child Left Behind* Act of 2001. In 2011, in response to the global rankings published by the Organization for Economic Cooperation and Development (OECD, 2011), President Obama declared that “Our generation’s Sputnik moment is now,” (Lohead, 2011; Obama, 2011). The President’s remarks give indication that educational reform is on the horizon once again. After the 2009 report depicted American students as “merely average”, the Secretary of Education indicated that the U.S. is pursuing educational reforms including higher standards and investment in effective teaching, (Lohead, 2011; Obama, 2011). The extent to which both historical and current reforms with the same aim have been inconsequential at improving student academic achievement (Bowles & Gintis, 2002; Hanushek, 2003) presents the need for new reform efforts to be coupled with rejuvenated research efforts to determine effective methods for improving outcomes. Erick Hanushek (2003) calls attention to the reality that though class sizes have fallen, qualifications of teachers have risen, and expenditures have increased, there has been relatively little positive change in student outcomes. Hanushek (2003) warns against continued investment in measures that are limited to increased input of resources.

The degree to which past reforms have been inconsequential presents a point of relevance for the direction of this study. The shortcomings of prior reform attempts have

been well documented. According to the 2009 OECD Education Rankings, the United States is 12th in the percentage of the population that has attained at least upper secondary education, 17th in overall reading, 13th in overall math, and 23rd in overall science. Additionally, the United States ranked 10th in global innovation according to the rankings published by the World Intellectual Property Organization (Dutta, 2011). As originally asserted by Tomlinson and Cross (1991), the problem of underachievement despite years of investment in educational progress is a “national emergency of the first order,” (p. 69). Maehr and Midgley (1996) rationalize that though historical and current methods of school improvement hold value, they miss the point as agendas such as higher standards, staff improvement, better working conditions, curriculum improvement, management autonomy, and better funding do not necessarily improve students’ investment in learning. Essentially, the aims of previous and present reforms fail to acknowledge that to learn more, students need to work harder (Tomlinson & Cross, 1991). As early as 1980, Covington, Spratt, and Omelich noted the misalignment of variables that impairs the ability of the system to effectively develop student effort as a valued product of the educational process.

The concept of expectations is one of American schools’ greatest sources of confusion. Educational reforms, in their aims to increase accountability for content coverage, have created an oversight of the reality that effort is a fundamental necessity for achieving at high levels (Bowles & Gintis, 2002; Tomlinson & Cross, 1991). Present policies place emphasis on performance rather than mastery thus creating dichotomous pass-fail experiences. According to theories of self-worth, systems that present pass-fail

measures of performance diminish student effort. Students with low confidence in their ability to perform successfully on a task will adopt effort avoidant behaviors so that when failure occurs it can be ascribed to lack of effort instead of lack of ability thereby preserving students' perceptions of self-worth (Covington & Beery, 1976).

Covington, Spratt, and Omelich (1980) assert that teachers would best be able to encourage the maintenance of consistently high effort through minimization of punishment in the event of failure. However, as noted by Heilman (1999), systematic elements such as performance standards, assessments, and grading policies are often outside the realm of autonomy afforded to teachers. Present systems of accountability measure the attainment of content knowledge rather than skills or attributes such as persistent effort. As pointed out by William (2013), given that students currently in kindergarten will not leave the workforce until 2070, and given the vast differences observed in workforce trends and demands in the same time span in history, the majority of the content being taught in schools will be irrelevant to students in the future. Rather, William (2013) suggests that the test of education is not amount of knowledge that students know, but students' appetite to know and capacity to learn. The combined impacts of reform efforts and the importance of standardized tests for school accountability have replaced teacher strategies to motivate students and promote effort with strategies that promote efficiency and competition (Heilman, 1999).

The Importance of Effort

The U.S. Department of Education's publication of *A Nation Accountable* (United States Department of Education, 2008) states that while we now have a system that defines our difficulties, we lack solutions for improvement (p. 14). The state of the public education system prompted a string of articles published by *Education Week* in October 2012 investigating why the national education system is still "at-risk" nearly thirty years after it was originally deemed to be so in 1983. Authors published in conjunction with the investigative series include Ronald Wolk (2009) who critiques the flawed assumptions of the primary premises of past and present reforms. Wolk (2009) asserts that policy makers have been so committed to a strategy of standards-based accountability that different ideas are marginalized and stifled. One idea that seems to have missed the bar for inclusion in development of educational policies is effort as alluded to by Compton, Raney, and Heeter (2009) who indicate that American students exert considerably less effort than their international peers. Alarming, this was the same underlying theme that Natriello and McDill (1986) noted in review of reports published in 1983 by the National Commission on Excellence in Education.

One of the common threads between past reform movements is the concentration on teacher quality, instruction, and curriculum. What has developed from prior research and prior reform initiatives is the belief that it is the responsibility of the teacher, not the student, to secure participation in educational tasks. Zimmerman (1990) exemplifies this in his study of self-regulated learning. The insight he provides as it relates to features that influence personally initiated processes is invaluable yet the recommendation for

application displaces the burden to the teacher and the system as the author indicates that the findings have “profound implications for the way teachers should interact with students and the manner in which schools should be organized,” (p. 4). Current works, (Dufour & Eaker, 1998; Marzano, Pickering, & Pollock, 2001; Schlechty, 2002; Wade, 2001) prevalent among K-12 public school practitioners emphasize the need for the teachers to design engaging lessons to elicit student interests. Equal emphasis is placed on the need for teachers to participate in professional learning opportunities to develop the acute abilities necessary to develop relationships to motivate students, create learning environments with shared control, provide for student choice, and analyze data to determine areas in which they need to improve instruction in order to improve student performance. Spawned by research indicating the significant impact of teacher quality on student performance (Darling-Hammond, 1999; Marzano, et al., 2001) each of these areas of emphasis (relationships, interest, engagement, choice, high expectations) has resulted in policies and practices emphasizing the effort necessary of teachers while neglecting to account for the innate effort required of students.

Given the extent to which past and present U.S. reforms have failed to yield the desired levels of achievement (Hanushek, 2003; Heilman, 1999; Tomlinson & Cross, 1991) and largely led to a decrease in student effort in comparison to international counterparts and students of past generations (Babcock, 2011; Chilcott & Guggenheim, 2010; Natriello & McDill, 1986; Compton, et al., 2009) it is necessary to revisit past research and conduct new investigations of factors impacting effort while embracing the assertion that high levels of academic achievement can only be reached through high

levels of academic effort (Bowles & Gintis, 2002; Thompson, 2004; Tomlinson & Cross, 1991). Robert Pace (1982) asserts that students should be accountable for the amount, scope, and quality of effort they invest in their own learning. Accountability for achievement and related student outcomes must consider both what the educational institutions have to offer and what the students do with those offerings (Pace, 1982). This study posits that the aspects of what institutions have to offer in terms of programs, curriculum, instructional approaches, teacher quality, and fiscal investment are well developed. What remains underdeveloped is an understanding of the features that determine the degree of effort students' exhibit while participating in the educational process.

The general model previously employed in research of educational effort centralized around aspects of self-perception of ability, control beliefs, outcome expectancies, and values. As is the purpose of new research, this study aims to provide understanding of how variables previously considered have evolved in the present context. As such, characteristics of self-perception of ability encompassed in Bandura's (1987) conception of efficacy expectancies have evolved to be widely accepted as a significant factor contributing to overall motivation and as a moderator of behaviors and subsequent levels of achievement (Bandura, 2001; Schunk, 1991; Zimmerman, 1990). Therefore, the present study includes academic efficacy as an independent variable predicted to have a significant impact on academic effort.

Additionally, a factor for indication of students' beliefs in the meritocracy of education is included as a mode of synthesizing the previously considered characteristics

of: control beliefs, outcome expectancies, and values. As noted by Zimmerman (1990), self-regulated learners view the acquisition of knowledge and attainment of desired outcomes as controllable processes. Thus, self-regulated learners are observed to have high efficacy, intrinsic task interest and display effort and persistence during the learning process (Zimmerman, 1990, p. 5). Bandura (1989), Schunk (1991), and Zimmerman (1990) all position goal setting and outcome expectancies as imperative in a reciprocal relationship with motivation and action. Unless anticipated outcomes of exerted efforts are attractive, students will not be motivated to self-initiate action (Zimmerman, 1990). This implied interdependency between control beliefs, outcome expectancies, and values is presented for investigation in this study as an element of merit (Bowles & Gintis, 2002; Akom, 2008). Essentially, students' belief about the ability of the educational system to facilitate attainment of desired outcomes is created to take the place of variables previously presented with isolated perspectives on valuing of specific academic tasks. Bandura (1989) and Schunk (1991) reaffirm the nature of looking at self-regulatory actions through a lens of general attribution as opposed to task specific occurrences. The development of a measure of meritocracy and the potential impact this feature has on behavior in conjunction with efficacy presents a point of authenticity for this study.

Statement of the Problem

The aim of attaining high levels of achievement is not unique to recent reforms in education. However, “the availability of data on cognitive performance scores on dozens of test instruments appears to have crowded out other reasonable hypotheses concerning less copiously measured individual traits” (Bowles & Gintis, 2002, p. 8). This assertion is central to the conceptualization of the problem addressed in this study. While effort has been noted as playing a critical role in attainment of academic success and employment opportunities (Bowles & Gintis, 2002), previous approaches to understanding student effort have focused upon the isolated relationship between effort and achievement without reference to the origins of effort (Thompson, 2004; Tomlinson & Cross, 1991). Previous studies of effort have produced recommendations that place the burden of eliciting effort on organizational practices and instructional delivery (Brookhart, 1998; Brophy, 1998; Hanushek, 2003; Heilman, 1999; Mac Iver, Stipek, & Daniels, 1991; Marzano, et al., 2001; Schlechty, 2002; Stewart, 2008). The flaw with the current application of the limited understanding of effort is that displacing the burden of effort to the teacher rather than the student negates the intrinsic, extrinsic, dispositional and situational aspects of effort (Convington, et al., 1980; Mac Iver, et al., 1991; McKenzie & Staff, 1974; Natriello & McDill, 1986; Pintrich & Degroot, 1990; Skinner, Wellborn, & Connell, 1990).

Given the declaration of the Secretary of Education (Duncan, 2011) to continue to pursue reforms comprised of higher standards and performance-oriented experiences for students, it is necessary to revisit previous insights gained on factors that motivate

student effort through efficacy expectancies and outcome expectancies and expound upon the potential impact of both students' perceptions of their own abilities and their perceptions of the ability of the educational system to affect desired life outcomes in the present context of education. Failure to acknowledge the role of agency and the impact of student effort will result in the continued failure of the system to increase achievement at high levels and promote equitable life outcomes (Bowles & Gintis, 2002; Hanushek, 2003; Thompson, 2004; Tomlinson & Cross, 1991).

Purpose of the Study

Though there are vast amounts of literature available (Bandura, 1989; Bandura, 1999; Bourdieu & Passeron, 1977; Bowles & Gintis, 2002; MacLeod, 1987) that have contributed to the understanding of human agency as a function of and within socially created constructs, there is a gap in the literature that synthesizes what is known to influence features of agency and outcome expectancies and the behaviors that result from the interaction between the two. Natiello and McDill (1986) assert that though numerous studies have examined the effects of social background and school-related variables on educational and occupational attainment, few have studied the effect of the effort students devote to school tasks. This study is indication that this statement holds true more than a decade later. The current body of literature presents an incomplete investigation of effort in the current context of education. The intent of this study is to expound upon the body of knowledge addressing the impact of efficacy beliefs on

agentive behaviors by introducing the concept of meritocracy as belief in the ability of the system to assist in attainment of desired outcomes and determine the interaction between features of efficacy and meritocracy relative to student effort. Though in theory all relationships are understood to be bidirectional, for the purposes of fulfilling the aim of this study, analysis will be limited to investigation of the causal relationships predicted to exist between selected independent variables and academic effort.

Research Questions

In an effort to fulfill the established intent of this inquiry, the researcher will seek to answer the following research questions:

When controlling for race, gender, socioeconomic status, and the potential interaction between academic efficacy and belief in the meritocracy of education:

- 1) Is there a positive relationship between academic-efficacy and academic effort?
- 2) Is there a positive relationship between level of belief in the meritocracy of education and academic effort?

Operational Definitions

This study of student academic effort draws on understanding of the following terms:

Academic efficacy: as defined by Bandura (1977, p. 3) refers to “beliefs in one’s capabilities to organize and execute a course of action required to produce a given attainment” (Bandura, 1977, p. 3)

Academic effort: describes students’ commitment of time, energy and/or attention to rigorous academic tasks (Thompson, 2004).

Belief in the meritocracy of education: is the extent to which students believe that effort contributed to the educational system will produce desirable and worthwhile returns in their future (Akom, 2008).

Efficacy expectancies: refer to the conviction that one can successfully execute the behavior required to produce outcomes (Bandura, 1977).

Outcome expectancies: individuals’ estimations that a given behavior will lead to certain desired outcomes (Bandura, 1977).

Social cognitive theory: is a set of principles grounded upon triadic reciprocal causation indicating bidirectional relationships between behavior, cognitive and other personal factors, and environmental influencers. A premise of this theory is that the interaction between influencers generates a general function of agency that is developed by the structures in which individuals are situated (Bandura, 1989).

Task-value: is the relative attractiveness of succeeding or failing on a task (Wigfield, 1994). Value can be assigned in relation to intrinsic-interest or the relative enjoyment of the activity or in relation to the utility of the task - the perceived usefulness of the activity for some future goal (Mac Iver et al., 1991).

Significance of the Study

Bandura (1989) proclaims, “Humans have an unparalleled capability to become many things. The qualities that are cultivated and the life paths that realistically become open to them are partly determined by the nature of the cultural agencies to which their development is entrusted. Social systems that cultivate generalizable competencies, create aidful resources, and allow room for self-directedness, increase the chances that people will realize what they wish to become” (p. 75). Given the extent to which an educational system serves as a social system charged with cultivating competencies, it is critical that practitioners within the field seek to greatly improve upon the aspects of the system that fail to appropriately affect these aims. The significance of this study resides in the extent to which it bridges previous research linking theoretical understandings of the origins of effort (Bandura, 1989; MacLeod, 1987) to effort as a measurable, dependent variable which Bandura (1989), Bowles and Gintis (2002), MacLeod (1987), Thompson (2004), and Tomlinson and Cross (1991) assert as necessary for goal attainment. This study contributes to the additive nature of social science research as it expounds upon Bandura’s (1989) theory of triadic reciprocal causation from a sociocognitive perspective expanding application beyond the previous focus on efficacy and general agency by introducing the concept of perceived meritocracy as a potential influencer of individuals’ academic effort.

This study evolves the measure of academic effort by reinforcing the need to measure effort as a component of general commitment and input into the educational process rather than limited to a measure of assumed value, time on task, or completion of

homework as has been done in some of the previous studies reviewed in chapter II. The selected measure of general effort directed toward global educational tasks accounts for the dynamic degree to which effort can be dispositional (Knapp, 1999; Mac Iver, et al., 1991; Prenzel, 1992; Zimmerman, 1990) and situational (Heilman, 1999; Knapp, 1999; Prenzel, 1992) in accordance with students' socially constructed environments. Extrinsic motivation for effort is an element that is more developed within the current body of research producing recommendations for curriculum design and instructional delivery to promote participation and engagement (Johnson, Crosnoe, & Elder, 2001; Marzano, et al., 2001; Renninger, 2000; Schlechty, 2002; Wade, 2001). However, the dispositional nature of effort and students' valuing of the educational process as a utility for attainment have been less developed. Generalizing value to the perceived merit of the educational process as opposed to measuring value relative to specific isolated academic tasks serves the broader intent of this study.

Effort as a dependent variable

As it relates to student effort and attainment, Bowles and Gintis (2002), and Jackson (2001) assert that personal traits including industriousness, perseverance, leadership, attitude, motivation, and effort are greater determinants of labor market success than academic performance or job related skills. Assuming the connection between attitude, motivation, and effort as established by Bandura (1989) and MacLeod (1987), the significance of this study relies on the unique focus on student effort as an output variable in the present socially constructed economic and educational systems.

The concentration on effort (rather than efficacy, aspirations, achievement, or attainment as previously studied) derives a considerable level of significance from studies indicating that the “contractually incomplete” employment relationships in the modern labor market (Bowles & Gintis, 2002) are impacted by an employee’s effort (Jackson, 2001; Taylor & Kristsonis, 2008). Given the extent to which educational systems have been constituted as mirrors of the economic systems in which they are situated (Bourdieu & Passeron, 1977; Bowles & Gintis, 2002), it is critical to further investigate how the presence or absence of student academic effort affects the rewards and opportunities provided by the school system (Bowles & Gintis, 2002).

Hidi and Harackiewicz (2000) concludes that there are two explanations for unsatisfactory performance: 1) lack of ability; or 2) lack of effort. As educators can do little about the first they have concentrated on the second. The previous concentration on effort, which largely assigns the responsibility for effort to teachers and the organization, have missed the point and been inconsequential (Compton et al., 2009; Hanushek, 2003; Heilman, 1999). Thus, bringing effort to the forefront of investigation, concentrating specifically on the characteristics impacting effort serves as a significant contribution to the present body of literature from which further research can be conducted to validate, expound upon, or refute the findings of this study.

Organization of the Study

For the purpose of organizational clarity the following section delineates the arrangement of the contents of this study. Chapter I, presents the purpose and significance of this investigation of the influencers of student academic effort relative to the present body of literature and current contextual economic and educational environments. Review of the information presented in chapter I should provide clarity on the degree to which the present body of literature on academic effort is incomplete as it is limited by the extent to which an understanding of effort and its measure have been confined to divergent instances of investigation primarily focused on the relationship between ability beliefs and achievement without giving equal consideration to the impact of individuals' belief in the ability of the system to produce desired outcomes. Chapter I presents the statement of the research problem addressing the failure of present reforms to acknowledge the need for effort to achieve high standards and identifies the purpose of this study as being to contribute to the additive nature of social science research by expanding the understanding of influencers on academic effort in the present educational context. Research questions, operational definitions and the significance of this study are presented in Chapter I. The primary significance of the study is the extent to which it serves to expound upon the sociocognitive perspective presented by Bandura (2001) in his development of the understanding of efficacy. This study seeks to add to the understanding of the impact of human agency on students' role in the educational process by introducing the component of belief in the meritocracy of the system as a potential influencer of academic effort in congruence with the known impact of

academic efficacy and the bidirectional interaction between outcome expectancies and efficacy expectancies.

Chapter II presents Bandura's (1977) social cognitive theory as the framework for this study while acknowledging points of convergence amongst other theories employed in past research of self-regulated processes including theories of self-worth, cognitive motivation, and expectancy-value. Synthesis of common characteristics considered in past research is presented to determine the degree to which they converge and align with Bandura's social cognitive theory inclusive of efficacy expectancies and outcome expectancies in relation to effort as the behavior of interest. Upon establishing the theoretical orientation of the study, chapter II progresses into discussion of the various capacities in which effort has been previously considered, the divergent modes of measurement of effort, and the multiple variables considered in relation to effort. The theoretical grounding reviewed in chapter II serves to provide an understanding of the need to reinforce effort as a measure of general commitment to the educational process. Additionally, chapter II presents the rationale for constructing belief in the meritocracy of the education system as a composite measure of control beliefs, outcome expectancies, and values when seeking to determine influencers of agency. The literature reviewed presents the rationale for the variables for inclusion in this investigation and the justification for those variables that have been previously considered but excluded from consideration in this study.

Chapter III presents a discussion of the methodology grounding this investigation and the analytic method employed to better understand influencers of student effort. As

further described in chapter III, this study employs the Education Longitudinal Study (2002), (ELS:2002-2004), conducted by the National Center for Educational Statistics as the data source for this study. Exploratory factor analysis is used to created proxy measures for student academic effort, academic efficacy, and level of belief in the meritocracy of the educational system. The model employed controls for the potential impact of race, gender, and socioeconomic status (believed to have impact through the social nature in which each is constructed). Chapter IV contains presentation of the findings from the model generated to predict relationships between academic effort and academic efficacy, belief in the meritocracy of the educational system, minority race origin, gender, socioeconomic status, and the interaction between academic efficacy and acceptance of the meritocracy of the educational system. Chapter V concludes this study with presentation of the extent to which the findings presented in chapter IV impact current policies and practices. Additionally, chapter V provides insight into recommendations for future studies and implications for educational practices.

CHAPTER II

OVERVIEW OF LITERATURE

Introduction

This study is situated amongst the present body of literature considering potential influencers of student academic effort. However, the limited nature in which effort has been investigated in the past makes it difficult to find a commonly posited theory to frame future investigations. This chapter is designed to introduce Bandura's (1977) social cognitive theory as the theoretical framework for this study while highlighting aspects of the theory that are reinforced by previously employed theories of self-worth, cognitive motivation, and expectancy-value. The discussion of theory is followed by a discussion of literature that is organized to identify and justify variables selected for inclusion in this study. After grounding the selected variables in prior research, this review of the literature will move toward a concentrated focus on the nature in which this study is an expansion of the sociocognitive agentive perspective evolved in Bandura's more recent works on efficacy and agency. Synthesis of past research for the purpose of deriving predictor variables for inclusion in this study displays the degree to which the variables have evolved in accordance with the advancements that have been made in the understanding of human agency relative to socially constructed systems of education. Both review of theory and prior studies of student effort solidify the necessity for the target population to be advanced enough in age to have forethought into

post-secondary outcome expectancies. Thus, the data set selected targets tenth grade students as the primary respondents.

Theoretical Framework

Bandura (1999) provides a comprehensive perspective relative to the multiple theories previously employed in studies seeking to understand self-processes involved in educational tasks and subsequent levels of achievement. Bandura (1999) summarizes the nature of divergence in theories employed within the common arenas of research, as resulting from the differences in what theorists believe people to be. Bandura (1999) states, “As the knowledge gained through inquiry is applied, the conceptions guiding social practices have even vaster implications. They affect which human potentialities are cultivated, which are underdeveloped, and whether efforts at change are directed mainly at psychosocial, biological, or sociostructural factors,” (p. 2). Bandura’s (1977, 1999) social cognitive theory has been selected to guide the development of this study as it has evolved into a theory that assigns significant magnitude to the role of human agency on individual behaviors and resultant life paths.

The extent to which this study is grounded in a comprehensive body of prior research is limited by the fact that effort has seldom been the primary variable for consideration. Effort has frequently been included for consideration in relationship to other factors such as academic achievement, motivation, and efficacy. Because a direct understanding of effort as a dependent variable has not been a common aim of past

investigations, an accounting of prior research does not lend itself to a comprehensive depth of understanding. Instead, what is available is a broad introduction to the multiple perspectives that have been previously presented.

Social Cognitive Theory

The central premise of social cognitive theory is that human behavior is explained in terms of triadic reciprocal causation in which behavior, cognitive and other personal factors, and environmental influences interact bidirectionally (Bandura, 1989). Human agency is uniquely determined by these interactions (Bandura, 1982). Under the assumptions of reciprocal causation the influences of different sources are not necessarily of equal strength and are not sequential interactions. There is essentially a functional value of agency resulting from the interaction of the identified influencers. However, the ways in which the resulting capacities are exercised, and the purposes to which they are put, vary cross culturally. The diversity in the culturing of inherent capacities is attributed to the social systems in which individuals are situated (Bandura, 2001). Social cognitive theory explicates the importance of understanding the bidirectional relationships between variables.

Additionally, social cognitive theory (Bandura 1977, 1999, 2001) has evolved to position behavior on a continuum between personal factors and outcomes, with efficacy expectancies and outcome expectancies serving as mediums for placement on the continuum. The proceeding presentation of literature has been constructed to rationalize

the degree to which the variables selected for inclusion in this study were generated with the aim of representing efficacy expectancies and outcome expectancies as influencers of effort.

Though the limitations imposed by the selected analytic method restrict findings to the influence of selected predictor variables on effort in a unilateral relationship, acknowledgement of the bidirectional influence of effort on academic achievement was of critical consideration when determining variables for representation in this study. However, as will be later discussed, the degree to which efficacy beliefs moderate the impact of prior academic achievement (Bandura & Locke, 2003) and the data set selected for the purposes of this investigation of academic effort negate consideration of prior achievement. Personal factors, environmental influencers, and behavior will each be expounded upon in the sections of literature reviewed specific to the derivation of variables for inclusion in this study. It is first necessary to introduce how assertions of social cognitive theory align with premises of other theories previously employed in investigations of self-regulatory processes.

Convergence of Previously Employed Theories

Determining the variance in agency resultant from the identified categorical influencers requires investigation into self-regulatory processes, which in prior research have been investigated relative to theories of self-worth, cognitive motivation, and expectancy-value. Bandura's (1982, 1989) conceptions of efficacy expectancies,

personal/cognitive factors and outcome expectancies encompass assertions congruent with theories of self-worth, cognitive motivation, and expectancy-value relative to effort, thus points of theoretical convergence will be presented in the sections that follow.

Self-worth theory

Covington and Beery (1976) propose that students who lose confidence in their ability to perform successfully on a task will adopt effort-avoidant behaviors so that when failure occurs it can be ascribed to lack of effort instead of lack of ability thereby preserving perceptions of self-worth. Later studies conducted by Covington and Omelich (1979, 1985) found that the theory of self-worth presents a realm of conflict for students internally. Internal conflicts result from the utility of effort as a moderator for maintenance of self-worth in lieu of failure. Findings give indication of an internalized value for hard work, thus students prefer to be seen as both able and motivated (Covington & Omelich, 1979, 1985). However, when faced with potential failure (resultant from their perceived lack of ability to be successful given the respective level of difficulty of the task and the structure of the system creating a pass/fail outcome) students employ laziness as an avenue to avoid shame from perceived low ability. In accordance with theory, conflicts arise in instances of failure as low effort-failure elicits the most punishment from teachers while high effort-failure is most shameful for students. Failure despite great effort is compelling evidence of low ability. In instances of failure, students demonstrating high effort demonstrate lower levels of self-worth assumingly related to increased perceptions of inability (Covington & Omelich, 1979,

1985). Aspects of self-worth theory as employed in these investigations of self-worth relative to effort converge with the evolution of Bandura's social cognitive theory of personality and the roles of self-evaluation and self-efficacy relative to motivation (Bandura, 1999; Bandura & Cervone, 1983). As noted in the study of Covington and Omelich (1985) the dichotomy of pass/fail outcomes has a significant impact on cognitive motivation as will be expounded upon the next section.

Cognitive motivation theory

Heilman's (1999) investigation of mastery-oriented experience and performance oriented experiences in relation to perceptions of ability, effort, teacher support, task value, organization and rules, and promotion of self-regulation provides an extension of cognitive motivation theory. Heilman (1999) found that mastery-oriented experiences elicit higher levels of motivation and effort than performance-oriented experiences due to diminished possibilities of failure. The use of cognitive motivation theory to consider the multiple variables presented by Heilman (1999) aligns with the advancements of Bandura (2001) relative to changes in environmental influencers specifically within the realm of educational reform and recent emphasis on accountability and resultant performance-oriented measures of assessment. Heilman (1999) creates awareness of the foundational contradictions of practices and theory through consideration of the extent to which failure diminishes self-worth and minimizes effort yet specific to education, grading policies, standardized assessments, conduct codes, honor rolls, and award systems presently employed in schools nation wide compound to establish a system of

reward-punishment based on attainment of universal standards for content knowledge with little allowance for the value of effort. In the frame of the two prongs presented by Bandura (1977), Heilman (1999) provides understanding of how outcome expectancies of success or failure and punishment or reward are regulated by efficacy expectancies.

The study conducted by Mac Iver, Stipek, and Daniels (1991) incorporates aspects of ability, expectancy-value, and effort through a lens of cognitive motivation as well. In their study of within semester changes in effort of junior high and senior high students, Mac Iver, et al. (1991) relied on cognitive theories of motivation to predict positive relationship between perceived ability and effort on a task, perceived ability and valuing of a task, and perceived importance of extrinsic expectations and student effort. The researchers assert that nearly every theory of cognitive motivation suggests that changes in ability perceptions partially determine changes in effort. The researchers expand the application of cognitive motivation theory to encompass the belief that changes in ability perceptions also relate to valuing of tasks. Essentially their claim is that students who believe that they are unable to master the knowledge and skills taught in a course may reasonably question the course's usefulness to them, which subsequently limits the value assigned to the course and diminishes effort. Consideration of the relationships between ability beliefs, outcome expectancies, and resultant levels of task-value lends to discussion of expectancy-value theory.

Expectancy-value theory

Though not the primary premise of theories of self-worth and cognitive motivation, both allude to the impact of outcome expectancies and valuing of tasks on self-regulatory processes. Pintrich and Degroot (1990) employed general principles of expectancy-value theory to examine relationships between motivational orientations (intrinsic and extrinsic), self-regulated learning, and classroom academic performance. Expectancy theory, and the adaptation employed by Pintrich and Degroot (1990) posit that increased expectancies of success elicit increased value of the task at hand. Conversely, low expectations of success create little value for the task leading to persistently low levels of effort and eventually a state of learned helplessness (Mac Iver, et al., 1991). Wigfield (1994) relied on concepts of expectancy-value theory to frame the prediction that individuals' expectations for success and the value they have for succeeding are important determinants of their motivation to perform different achievement tasks. Expectancy-value theory provides multiple points of convergence with core assumptions of other theories employed for investigation of self-processes. Expectancy-value may be applied to expectations of success in relation to ability, effort, and valuing of tasks. Additionally, expectancy-value theory for motivation contains threads of explanation that align with Bandura's (1977) conceptions of efficacy and outcome expectancies. Similar to Bandura's assertions of efficacy, Wigfield and Eccles (2000) postulate that expectancy and values influence individual's choice of achievement tasks, persistence, effort and performance. Essentially, expectancy-value theorists argue that performance can be explained by students' beliefs about how well

they will do on an activity and the extent to which they value the outcome of the activity. This accords with Bandura's (1977) frame for the interaction between efficacy expectancies and outcome expectancies. Wigfield and Eccles (2000) incorporate social cognitive variables acknowledging that prior experiences and other social influences affect individuals' perceptions of task difficulty, ability beliefs, goals, self-schemas, and affective memories. The elements of social cognition alluded to by expectancy-value theorists are acutely defined in Bandura's (1977) explanation of social cognitive theory. Of particular relevance is the introduction of efficacy as a measure of individual's beliefs about general abilities (Eccles & Wigfield, 1995; Bandura, 1999) as opposed to efficacy as a measure restricted to task-specific beliefs (Parajes, 1996).

Summary of Theoretical Grounding

Ability beliefs, outcome expectancies, and values are common themes of theories of social cognition, self-worth, cognitive motivation, and expectancy-value. Heilman (1999) discerns that all students are motivated, but multiple motives can operate at the same time and compete with classroom priorities. Interacting theoretical components include the impact of ability beliefs on both expectancies for success and value of tasks. Theories of self-worth, cognitive motivation, and expectancy-value as employed in previous investigations of self-regulatory processes are limited by two critical aspects: 1) failure to theoretically account for the bidirectional relationships between variables; 2) failure to theoretically account for the impact of multiple personal, environmental, and

social factors on expectancies, values, and ability beliefs. Bandura's (1977, 1982, 1989, 1999, 2001) social cognitive theory overcomes the limitations of other theories previously employed by giving critical consideration to the interactions between personal/cognitive factors, environmental influencers, and behavior.

Review of Literature

The present body of available literature is limited by the degree to which most of the aforementioned studies are independent of each other. Therefore, though effort is considered in each, it is not necessarily considered in the same capacity between studies nor is effort measured by common means amongst prior studies. Essentially, the independence of one study from another limits the development of a progressive understanding of effort. This review of relevant literature presents the capacities to which effort has been considered, the divergent modes employed to measure effort, and the multiple variables that have been considered relative to effort in past studies. This presentation of literature then refers to Bandura's (1977) social cognitive theory to identify and justify variables selected to fulfill the purposes of this study.

Previous considerations of effort

Effort has been considered in prior studies in diverse capacities. Effort has been identified as an influencer of selected dependent variables and identified to be influenced by independent variables considered horizontally. As noted, few studies have positioned

effort as the dependent variable for primary investigation, or employed a linear analysis to determine causal relationships between independent variables inclusive of effort. Effort has been asserted to exert influence over academic and occupational outcomes (Bowles & Gintis, 2002; Jackson, 2001; MacLeod, 1987; Taylor & Kristsonis, 2008), and affective feelings of shame and self-worth (Covington & Omelich, 1985; MacLeod, 1987). Prior research has revealed the following variables in relation to student effort: motivation (Brophy, 1998), task-value (Mac Iver, et al., 1991; Natriello & McDill, 1986), background factors (Brookhart, 1998; McKenzie & Staff, 1974; MacLeod, 1987), aspirations/outcome expectancies (Bandura, 1977, 1982; Brookhart, 1998; MacLeod, 1987), extrinsic pressure for performance from peers, parents, and teachers (Eccles, Adler, Futterman, Goff, Kaczala, Meece, & Midgley, 1983; Fall & Roberts, 2012; Natriello & McDill, 1986; Wigfield, 1994), ability beliefs (Bandura 1977, 1982; Bandura & Cervone, 1983; Covington & Beery, 1976; Covington & Omelich, 1979, 1985), and school level factors (Brophy, 1998; Heilman, 1999). The various roles in which effort has been considered provides some evidence of the degree to which past studies have not been vertically aligned to lend themselves toward a progressive understanding of effort. The following section highlights some of the studies referred to above to demonstrate how variance in the capacity to which effort has been considered provides divergent methods for measurement of effort.

Multiple measures of effort

In accordance with the description of the varying capacities for which effort has been considered in prior studies, there are correlating variances in the methods used to measure effort. In some instances, assertions regarding levels of effort are based on theoretically assumed values of effort rather than measurable values of effort. The primary purpose of the study conducted by Eccles, et al., (1983) was to discover the factors that contribute to gender differences in math achievement. Thus the selected variables for consideration were relative to math aptitudes. The study examines respondents' self-task concepts, self-reported beliefs about math aptitudes, the impact of parents as role models and expectancy socializers, and the impact of teachers as reinforcers and aptitude socializers. The concept of effort in the study conducted by Eccles, et al., (1983) was grounded upon the notion that a person calculates the minimal amount of effort needed to succeed on a task given the person's estimation of his or her ability and the perceived difficulty of the task. The researchers thus assume that the amount of effort-exerted increases in relation to the amount of effort considered worthwhile based on a cost/benefit analysis of his or her self-assessment of abilities and value of the task. Therefore, effort was an assumed value derived from relationships found between measures of self-concept and task-value included in the survey questionnaire employed by the researchers.

Reliance on an assumed rather than measured value of effort is repeated in the works of Brophy (1998). The primary purpose of Brophy's study was to understand the motivation behind choices and actions to better equip teachers with the understanding

needed to incite motivation in their students. Effort is an assumed value based on theories and measures of expectancy and ability. Brophy (1998) similar to Eccles et al., (1983) asserts that an individual's evaluation of whether they can attain desired rewards with reasonable effort is a regulator of choice. Thus expectancies of failure will decrease likelihood of effort even for highly valued task.

Covington and Omelich (1985) sought to determine affects resultant from applied effort and subsequent performance results. The method of measurement for this study was a questionnaire, which provided hypothetical descriptions of scenarios with specified levels of effort and subsequent performance on a series of midterm examinations. The responses on the questionnaire allowed the researchers to measure different levels of shame experienced relative to specified levels of effort and subsequent outcomes of success or failure. Similar to the construction of the studies of Eccles, et al., (1983) and Brophy (1998), effort in the study conducted by Covington and Omelich (1985) was not a measured value but rather an assumed correlation based on the descriptions provided in the hypothetical situations on the questionnaire.

Other studies, while failing to position effort as the primary variable of investigation, have included effort as a concrete value through various modes of measurement. Mac Iver, et al., (1991) investigated changes in students' valuing of a course and changes in extrinsic pressures as determinants of effort changes. This study also examined relationships between ability-perceptions and effort testing prior theoretical assertions that low-ability perceptions would produce effort-avoidant strategies and states of learned helplessness. The researchers employed a questionnaire

to create a measure for effort relative to respondents' self-evaluations. Mac Iver, et al., (1991) included the following four questions to measure the level of student effort: 1) How much effort do you usually put forth in class?; 2) How hard are you working to learn this subject?; 3) How hard do you study for tests in this class?; 4) How hard do you work in this class?. Each survey item was provided a Likert-type scale for response.

Heilman's (1999) study explored the impact of classroom climate on student effort and self-perceptions of academic ability. The researcher developed a survey instrument to collect data from a random cluster of students. The survey instrument included variables for effort, self-perception of ability, task value, teacher support, teacher control, task orientation, organization and rules, performance orientation, mastery orientation, performance evaluation and mastery evaluation. Heilman (1999) uses the terms engagement and effort interchangeably. The measure for engagement/effort was based on the behaviors that teachers typically expect from students such as: attending to classwork, attendance in class, seeking help when needed, and completing homework. This measure of effort is similar to that employed in Brookhart's (1998) replication of the Natriello and McDill study of 1986. Natriello and McDill (1986) created a model for the determinants of student effort and school-based achievement. In the study conducted by Natriello and McDill (1986) effort was determined by students' completion of homework. In 1998, Brookhart replicated the Natriello and McDill (1986) study with the added consideration of students' perception of the difficulty of their classwork. Brookhart (1998) created a composite measure for effort similar to that utilized by Heilman (1999) including: completion of homework,

trying hard (as perceived by the teacher), asking for help when needed, and participating in class.

In 1974, McKenzie and Staff applied the theory of consumer behavior to the problem of student choice at the university level. This study defines achievement as students' stock of knowledge measured by performance on standardized college entrance assessments. It is assumed that students' can master any course if enough time is invested. McKenzie and Staff (1974) propose that students' investment of time is determined by the utility value students assign to the coursework. In the McKenzie and Staff (1974) model effort (student input of time) is transformed into new knowledge (academic achievement) according to an individual "learning rate", which is determined primarily by the student's scholastic aptitude. Prince, Kipp, Wilhelm, and Wetle (1981) employ the McKenzie-Staff (1974) model to determine the extent to which an empirical measure of effort is a statistically significant explanatory variable in various learning models. Findings from the Prince, et al., (1981) study reinforce the validity of the McKenzie-Staff formulation of effort relative to multiple learning theories depicting effort as a significant determinant of academic achievement. The constraint of the both the McKenzie-Staff (1974) model and the Prince, et al. (1981) model is that effort itself is limited to a measure of time input by the student, the validity and nuance of the model is primarily derived from the unique inclusion of an efficiency rate for the utilization of that time.

As shown through review of the aforementioned studies, effort has been constituted as many different values dependent upon the capacity to which it was being

considered. Effort has been incorporated as an assumed value, the input of time, the completion of specified academic tasks, attendance and participation in class, and a composite of self-reported levels of effort on general educational tasks. As will be discussed in detail in chapter III, the measure of effort employed in this study aligns most with the composite measure of self-reported levels of effort on general educational tasks as employed by Mac Iver, et al. (1991). Dependent upon the capacity in which effort is being considered and the mode by which it is being measured, multiple other variables have been included in relation to effort.

Additional variables considered in prior research

In seeking to ground development of this study in past research, it is necessary to acknowledge the other variables that have been accounted for relative to effort either in the function of controls or considered in congruence with effort as interactions between independent variables. Previous studies have examined the effects of social background, school-related variables, and extrinsic expectations on educational and occupational attainment. Background factors of race/ethnicity, socioeconomic status, father's education, mother's education, father's occupation, gender, ability, number of siblings, number of books in the household, and aptitude/prior academic achievement measured as performance on standardized tests or grades have been included in previous investigations in relation to effort (Akom, 2008; Bowles & Gintis, 2002; Brookhart, 1998; Jackson, 2001; MacLeod, 1987; Natriello & McDill, 1986). Previously considered school related factors have included teacher quality, grading systems,

mastery orientation of assessment, performance orientation of assessment, organizational rules, award systems, content coverage, and instructional delivery (McKenzie & Staff, 1974; Brookhart, 1998; Eccles, et al., 1983; Heilman, 1999; Mac Iver, et al., 1991; Prince, et al., 1981). Extrinsic pressures for performance in relation to effort have been included as measures of father's aspirations/expectations for the student, mothers' aspirations/expectations for the student, peers' expectations of the student, and teachers' expectations/aspirations for the student (Brookhart, 1998; Jackson, 2001; MacLeod, 1987; McKenzie & Staff, 1974). The multitude of variables previously considered in relation to effort makes it necessary to critically consider the theoretical grounding of this study to select variables for consideration that are relevant to the specific purpose of this investigation.

Selection of Relevant Variables

The multitude of variables previously considered were determined by each researcher relative to the primary variables being investigated, the capacity to which effort was being considered, and the purpose of the study. As noted by Bandura (1999), divergence in researchers' perspectives on aspects of human functioning determines what is considered in investigations of self-processes and what is left unexplored. The purpose of the following section is to offer the reader the rationale for inclusion and exclusion of variables considered in this study as determined by the researcher's perspective on elements relevant to effort. Relevance of variables has been determined

in alignment with Bandura's (1977) assertion of reciprocal causation existing between personal/cognitive factors, environmental influencers, and behavior.

Academic efficacy

In Bandura's description and development of social cognitive theory presented in successive publications (1977, 1989, 1996, 1999, 2001) cognitive and other personal factors rely heavily on the understanding of cognitions as brain processes that are produced by individuals and are influenced by the historical and social contexts within which the individuals are situated. As it specifically relates to cognitive and other personal factors, Bandura has greatly expounded upon the concept of efficacy (1999, 2001). Efficacy is understood to be the belief in one's abilities to be successful. Per Bandura (1989) efficacy is derived from performance accomplishments, vicarious experiences, verbal persuasion, and psychological states. According to Bandura (1999) people have the power to influence their own actions and produce certain results. To do so, people have to believe that affecting desired results is within their control and that they have the ability to do so. Bandura's later works (Bandura, 2001; Bandura & Locke, 2003) emphasize the magnitude that efficacy has on individual and group actions in multiple arenas including but not limited to academic effort, resilience, athletics, and career requirements. Bandura and Locke (2003) position efficacy as the ultimate moderator of people's ability to function as "anticipative, purposive, and self-evaluating proactive regulators of their motivation and actions" (p. 87). Efficacy is asserted to be the moderator of occupational choices and level of mastery of education requirements

for selected careers when variations in actual ability, prior level of academic achievement, scholastic aptitude, and vocational interest are controlled for (Bandura & Locke, 2003, p. 90).

The meta-analysis conducted by Bandura and Locke (2003) indicates that efficacy beliefs regulate human functions of agency (such as goal setting, perseverance, resistance to stress, motivation, and choices) through cognitive, motivational, affective, and decisional processes (p. 87). Motivation is understood to be the cognitive process combining goal setting and self-evaluation of one's abilities to attain the established goals (Bandura & Locke, 2003). Motivation can be organized into a model of expectancy-value where degree of effort is the product of: 1) the degree to which students expect to be able to perform tasks successfully if they apply themselves; and 2) the degree to which individuals see value in what they can expect in return for their effort (Brophy, 1998; Bandura, 1989). The value individuals assign to expected outcomes is influenced by the person-environment segment of causation which as described by Bandura (1999) is the influential force resulting from the reactions people have to their social environment as a result of their physical characteristics and their socially conferred roles and status.

A finding of the 2003 study conducted by Bandura and Locke critical to the grounding of this study is that efficacy has an impact on students' self-regulatory learning processes and a positive and significant impact on individual's aspirations independent of prior academic achievement and parental aspirations for children (Bandura & Locke, 2003, p. 89). The evolution of efficacy into a multidimensional

feature of agency can be largely attributed to the multitude of studies published by Bandura over the last two decades. His most recent works, including the 2003 meta-analysis present the vertex in the literature that this particular study attaches to for grounding and significance. Introduction of the relationship between efficacy and aspirations lends itself to discussion of career paths and attainment creating a bridge between an internal personal factor and a measure of opportunity that has come to be highly scrutinized in education largely because of the transparency generated by the systems of accountability that recent educational reforms have produced.

From its foundation the education system has been charged with being the means of equalizing life opportunities- “the balance wheel of the social machinery” (Mann, 1848). Evolution of the notion of efficacy has centralized on the critical role that human agency plays while individuals interact with the multiple social and economic systems that provide structure to the likelihood of various life paths. As Bandura (1999) noted, human action is the interplay between personal and situational influences (p. 2). Situational influences in previous works have been primarily considered as contextual or environmental influencers relative to race, gender, and socioeconomic status (Bourdieu & Passeron, 1977; Bowles & Gintis, 2002; Doane & Bonilla-Silva, 2003; Eccles & Wigfield, 1995; Fall & Roberts, 2012; Goldthorpe, 1996; MacLeod, 1987). The concepts of social reproduction, generational poverty, the glass ceiling, cultural capital all accord with the perspective that socially constructed situational contexts have on impacting on the realities that individuals view as being within their locus of control and as being attainable in accordance with their own capabilities.

As noted by Bandura (1999), knowledge gained from inquiries of self-reference guide efforts of change toward the direction of psychosocial, biological, or sociostructural factors. Reform movements in education have been limited to the latter in the form of revisions that have produced accountability systems that depict gaps amongst student groups, revision of the curriculum to better incorporate previously marginalized populations, professional pedagogies to address the instructional practices most effective for diverse student populations, and alterations in fiscal policies to promote equity. Few efforts toward change have been directed toward incorporation of agentic functioning within the established system.

Incorporation of the cognitive function that human agency plays in interaction between persons and their environments becomes magnified in the findings of Bandura & Locke (2003) who indicate that self-efficacy beliefs alter individual's goal selection and effortful performance. According to Bandura and Locke (2003):

The findings of this substantial body of research showed that the higher perceived self-efficacy to fulfill educational requirements and occupational roles is, the wider are the career options people seriously consider pursuing, the greater is the interest they have in them, the better they prepare themselves educationally for different occupational careers, and the greater is their staying power in challenging career pursuits. Efficacy beliefs predict occupational choices and level of mastery of educational requirements for those careers and predict persistence in technical or scientific pursuits when variations in actual ability, prior level of academic achievement, scholastic aptitude and vocational interest are controlled (p. 90).

Additionally, the researchers assert that:

The impact of familial socioeconomic status and parents' self-efficacy and aspirations on their children's occupational preferences is entirely mediated through the children's perceived occupational self-efficacy and academic aspirations. Perceived occupational self-efficacy rather than actual academic achievement is the key determinant of the kinds of career pursuits children

seriously consider for their life work and those they disfavor (Bandura & Locke, 2003, p. 90).

The findings presented above are additive to the perspective the researchers present depicting humans as proactive and forward thinking rather than reactive to past situations and events. The positioning of efficacy as a moderator of individual actions and aspirations independent of prior experiences of failure and perceived control is divergent from Bandura's (1977) earlier propositions that incorporated perceived locus of control as a feature of human agency. Bandura's latter works (Bandura & Locke, 2003) critique theories for the degree to which they depict individuals as reactive to situations and past performance rather than forward thinking goal setters.

As Bandura's development of social cognitive theory and understanding of self-efficacy and its application have progressed so has his alignment with goal theory more so than prior theories of control (Bandura & Locke, 2003). This study reverts to Bandura's former notions of locus of control when introducing the concept of perceived meritocracy into the development of aspirations and effortful performance. However, the theoretical perspective to which works on efficacy have evolved is incorporated into the discussion of the potential interaction between individual's belief in their own abilities and their belief in the ability of the education system to assist in attainment of desired life outcomes.

Control variables

In development of the concepts of efficacy and motivation, Bandura introduces the notion of locus of control. Locus of control is the perceived belief that outcomes are

determined by one's own actions, which can have a number of effects on self-efficacy and behavior (Bandura, 1977, p. 204). The introduction of locus of control creates the need to consider the impact of personal characteristics that have been determined in theory and research to influence individuals' efficacy expectancies and outcome expectancies due to the sociohistoric trends outlined in the premises of social reproduction theory that counter the concept that individuals' have authentic control over their own life paths (Akom, 2008; Bourdieu & Passeron, 1977; Bowles & Gintis, 2002; MacLeod, 1987; Marshall & Swift, 1996; Ogbu, 1992).

Consideration of the impact that sociohistoric trends have on development of self-efficacy encompasses race, gender, and socioeconomic status as variables that have been asserted through theory to affect individuals' historic and social contexts. Historic and social contexts have been shown to impact the development of capacities considered as personal factors, (Bandura, 1989; Bourdieu & Passeron, 1977; Bowles & Gintis, 2002; MacLeod, 1987). Race, gender, and socioeconomic status have been affiliated with associational actions and norms that impact levels of social capital within organized systems, therefore each will be individually considered as control variables in this study.

Belief in the meritocracy of education

As presented in the discussion of efficacy, the interaction between personal and environmental influencers is a critical component of the theoretical frame guiding this study. Bandura (1989) asserts that people are both products and producers of their environment. "The aspects of the potential environment that become the actual

environment for given individuals thus depend on how they behave,” (p. 5). The freedom to exercise control over one’s development and life path requires effective tools of personal agency. Wigfield and Eccles (2000) indicate agency is influenced by the perceived difficulty of the task, an individual’s goals, self-schemas, and affective memories. According to Mac Iver, et al. (1991) expectancies for success are high when an individual has high perceptions of ability and a high level of perceived utility for the anticipated outcome. Interest is deemed to be the intrinsic value of an activity sparked by enjoyment of the task. Interest value is related to situational levels of motivation and corresponding stability/instability of effort (Pintrich & Degroot, 1990; Ryan & Deci, 2000). Utility value is associated with the perception that the task holds value for attaining a future goal or for success in future uses (Mac Iver, et. al., 1991; Ryan & Deci, 2000). Utility value is the source of connection between valuing of a task and corresponding goals or aspirations. Assigned value is relative to established aspirations or goals that are not devoid of socio-cultural restraints (MacLeod, 1987; Fall & Roberts, 2012).

Students’ expectations for educational attainment affect levels of involvement in classroom learning and resultant achievement (Fall & Roberts, 2012). Low expectations for post-secondary success correlates with little perceived value for the schooling process and participation in school tasks (MacLeod, 1987; Ryan & Deci, 2000). This study theoretically proposes that students who accept the general utility of the educational process demonstrate dispositional motivation and general effort or commitment to the process of education. Therefore, understanding the degree to which

students assign utility-value to academic tasks as it relates to both individual post-secondary aspirations and the general merit afforded to the present processes of education is relevant to the purposes of this study. Belief in the meritocracy of the schooling system and schooling process is generated to serve as a proxy of expectancy-values and associated levels of motivation for effort assuming effort to be the product of: 1) degree to which individuals expect to be able to perform tasks successfully if they apply themselves; and 2) the degree to which individuals value the reward of the task relative to individual aspirations (Brophy, 1998).

Meritocracy as it relates to this study should be understood as a system in which rewards and advancements are distributed on basis of achievement. Therefore, belief in the meritocracy of education comprises various aspects. First, belief in the system itself requires acknowledgement of a meritocratic system for general policies and practices such as grading policies, awards, honor rolls, recognitions, and curriculum tracking processes. This belief is affected by the inequitable societal forces of social capital upon which the system was created and within which it functions, (Akom, 2008; Delpit 1988; Ladson-Billings, 1995; Ladson-Billings & Tate, 1995). Stearns and Glennie (2006) discern that in the process of determining sequences of events for the transition into adulthood, adolescents incorporate what they know about themselves with their abilities, physical changes, and opportunities offered in social roles. This sequence of events is often stigmatized in accordance with race, gender, and socioeconomic status.

Life paths that realistically become open to individuals are partly determined by the nature of societal opportunity structures (Bandura, 1989, p. 8), which are largely

influenced by relative levels of social capital (Akkom, 2008; Coleman, 1988). In an application of social reproduction theory, (Bowles & Gintis, 2002; Marshall & Swift, 1996) reveal that parental economic status is passed on to children in part by means of unequal educational opportunity. As noted in discussion of the selected control variables for this study, this aspect of social reproduction theory makes socioeconomic status critical for inclusion as a control variable. Understanding how external systems impact the cognitive processes associated with development of forethought and outcome expectancies is of vital consideration in this study. To evolve the concept of both expectancy and value as it relates specifically to an educational system, a factor of meritocracy is generated to capture the degree to which students' believe in the ability of the system to facilitate their desired levels of attainment. Belief in the meritocracy of the system will be measured through respondents' belief in the ability of the system to produce desirable life outcomes. Such beliefs give indication of aspirations and the utility-value assigned to the educational process for individual expectancies of attainment, (Bandura, 1989, 1996; MacLeod, 1987), as well as the degree to which the system allows their actions to control the resultant outcome.

MacLeod's (1987) study provides insight into the role that principles of social reproduction theory play in explaining the extent to which socioeconomic status and belief in the ability of the system to produce desirable life outcomes causes individuals to lower personal standards to avoid discontent with substandard performance (or perceived self-inefficacy). The impact of the social construction of race, gender, and socioeconomic is reflected by an understanding of how parental and peer expectations

and actions influence students' aspirations, value of education, and belief in their own abilities through "feedback loops" (Akom, 2008; Bandura & Locke, 2003; Delpit, 1988; Doane & Bonilla-Silva, 2003; Ladson-Billings, 1995; Ladson-Billings & Tate, 1995; MacLeod, 1987; Moses, 2002; Valenzuela, 1999). Bandura (1999) asserts that more so than an economic condition, socioeconomic status causes differentiation in the belief of parents in their abilities to help their children aspire to high levels of achievement.

The concept of meritocracy when applied to an organizational system implies perceived fairness in the degree to which the system issues rewards or punishments that one deserves. Therefore, a measure of perceived merit lends itself being a consolidation of: 1) perceived fairness of the system relative to general policies and practices such as grading policies, awards, honor rolls, recognitions and curriculum tracking processes, and 2) the perceived utility-value of the system relative to individual post-secondary aspirations or outcome expectancies. Each of the components of merit is affected by the socially constructed impact of race, gender, and socioeconomic status within the organizational system. Having a composite measure of outcome expectancies inclusive of perceived utility-value relative to personal factors and aspirations allows for greater balance in the investigation of potential influencers of agency given the known impact of efficacy expectancies established by the successive works of Bandura (1977-2003).

Academic effort

As presented in the introductory chapter of this study, Williams (2013) identified personal empowerment as one of the purposes of education. In elaborating upon how

personal empowerment can be attained through the aims of education, he indicated that development of creativity and entrepreneurship were more appropriate goals of the educational system than attainment of specified content. Deconstruction of this idea through the framework of past theory and research aligns with Bandura's (1999, 2001) evolution of the role that agency plays in determining individual's life paths and the degree to which individuals are able through forethought and efficacy beliefs to overcome the constraints of their sociohistoric environments. Therefore, understanding effort as a practical utility of agency (Bowles & Gintis, 2002) is important for advancing the degree to which practices and reforms are able to fulfill the purpose of providing personal empowerment to students through the processes of education. Personal empowerment is unattainable without some level of human agency.

Synthesis of the multiple works of Bandura (1989, 1999, 2001; Bandura & Locke, 2003) indicates that behavior, self-efficacy, and socially constructed environmental factors exert influence on one another. "Unless people believe that they can produce desired effects by their actions, they have little incentive to act," (Bandura, Caprara, & Pastorelli, 1996, p. 1206). Such beliefs originate from efficacy and perceived constraints of the social system within which individuals assess the reality of potential life outcomes (Bandura, et al., 1996). In his expansion upon the concept of agency, Bandura (1989) indicates that self-generated behaviors are at the core of causal processes. The unique capacity of humans to exert judgment over their own capabilities and contexts allows individuals to effect change in themselves and their situations through their own effort (Bandura, 1989). As noted in chapter I, effort has been selected

as the targeted behavior/action in this study as it has emerged through review of past educational reforms, present levels of academic achievement, and relevant literature as a variable that has been marginalized, yet has the potential to affect a great deal of influence over students' levels of academic achievement and occupational attainment.

Specific survey items selected to comprise the factor variable created for a measure of effort relative to general commitment to the process of education is provided in detail in chapter III. Presented here, however, is further rationale for the measure of effort as a general function of agency. In his 1989 and 2002 studies, Bandura solidified the utility of measuring agency as a general function rather than an isolated targeted activity. This study evolves the variable of effort to a general measure of individual input into the educational process giving credence to the dispositional nature of effort. Because effort is being investigated in this study specifically as a function of agency and not as a mode for attainment of specific performance standards, several variables considered in prior studies have been excluded.

Exclusion of Previously Considered Variables

As explained, the selection of variables for inclusion in this study is guided by the sociocognitive agentive perspective presented and expounded upon by Bandura (2001). There are variables that have been considered in prior studies that have been intentionally excluded from consideration in this study. The most notable exclusions are

school level factors (including teacher quality), extrinsic pressures for performance, and prior academic achievement.

School level factors

Investigation of school level factors in relation to academic achievement is an area well developed within the current body of literature (Heilman, 1999; Marzano, et al. 2001; Schelcty, 2002; Schraw, Flowerday, & Lehman, 2001). Past research has included a variety of measures serving as proxies of school level variables such as climate, affect of the teacher, perceived teacher support, teacher quality, and resource allocation. The impact of school level factors on aspects of human agency (such as effort, efficacy, and aspirations) is confounded by the elusive nature of defining school level factors and the multitude of theoretical perspectives that can be employed to guide investigations.

Review of prior research exemplifies the difficulty of identifying and measuring school level factors proposed to have impact on individual student processes. Prince, et al., (1981) employed a proxy for “technology” described to be forms of school resources (teaching aides and physical facilities) as a control variable relating resources to efficiencies. Hidi and Harackiewicz (2000) measure school climate through a general assessment of the extent to which grading systems, conduct codes, honor rolls and awards impact students’ perceptions of the degree to which the school’s processes are mastery-oriented versus performance-oriented. Findings from previous studies of school level factors are mixed. Whereas as some research (Appleton, Christenson, & Furlong, 2008; Marzano, et al., 2001; Sazik, Pape, & Hoy, 2012) indicates the significant impact

of an effective teacher versus and ineffective teacher on the growth and learning rate of students, other research (Hanushek, 2003) depicts the recent investment in the improvement of teacher quality as being inconsequential in relation to the aim of achieving higher levels of academic success for all students. Most of the previous studies (Hidi & Harackiewicz, 2000; Natriello & McDill, 1986; Prince, et al., 1981) employed unilateral models and methods of analysis to investigate relationships between school level variables and individual level variables. The error in employing a unilateral model for analysis when considering both school level and individual level variables lies in the failure to recognize the heterogeneous nature of school level factors. Failing to add in hierarchical elements for statistical analysis assumes that the standardized measures for assessing teacher or school quality have a universal impact on each student respondent, which negates the constructivist role of the student in the learning process that this study essentially aims to bring to the forefront of the discussion. Therefore, school level factors have not been included in the model for this study.

External expectations

Performance expectations post *NCLB* (2001) are very different than the type of performance standards measured in the effort-based research conducted prior to the boom in standardized testing and national accountability. Performance expectations, also termed external expectations, as measured by Covington and Beery (1976), Natriello and McDill (1986), Brookhart (1998), Mac Iver, et al. (1991), Stewart (2008), and Wigfield (1994) were relative to teachers, peers, and parents' expectations for

students' behaviors and outcomes. In most of the aforementioned studies, with the exceptions being Covington and Beery (1976) and Mac Iver, et al. (1991), external pressures for performance were found to have negligible effects on student effort. Mac Iver, et al. (1991) found a notable effect between parental pressures for performance and expectations for post-secondary attainment and student effort for junior high students but a non-significant relationship between parental pressures for performance and expectations for post-secondary attainment and student effort for senior high students. The researchers attributed the difference in the magnitude of the impact of the variable between age groups to the natural development that occurs between early and late adolescence and the corresponding decrease in the influence of parental input as independence is developed.

Additionally, when considering inclusion of performance expectations as a relevant variable for this study, it is important to acknowledge the discrepancy between the interpretation of performance expectations in prior research and the derivative of the meaning as utilized in modern applications. The modern meaning of the term "performance expectations" in the context of high-stakes standardized testing has not yet been explored enough as an element for measureable impact to be included in this study. Further research is recommended to better understand the impact of established expectations or performance standards in relation to effort, motivation, and efficacy. However, this aim goes beyond the intent of this study. Therefore, extrinsic pressures for performance measured in previous studies as parent, teacher and peer expectations have been purposefully excluded from consideration in this study as: 1) in many of the past

studies such expectations were determined to be non-significance; and 2) there has not yet been enough investigation into the impact of state and national performance standards on individual students' behaviors and self-schemas in the present context of high stakes testing in order to be able to include this as a reliable and measurable variable in this study.

Prior academic achievement

Finally, the last and possibly most notable exclusion from consideration in this study as it relates to grounding in prior research is the exclusion of prior academic achievement. Exclusion of this variable has two prongs the first being theoretical, the second being a limitation of the study's design. The aim of most efforts in education past and present is to increase students' academic achievement. The focus on academic achievement as precedent over all other aims of the educational process creates conflicting forces in education (Heilman, 1999; Hidi & Harackiewicz, 2000). Emphasis on academic achievement as a measure of performance on standardized assessments creates a binary system for performance evaluation as the entire system is established to attach pass/failure labels to students' school performance. This violates two premises of previous research. First, pass/fail systems of measurement for performance create opportunities for failure that serve to diminish rather than promote effort (Heilman, 1999). In accordance with self-worth theorists (Covington & Beery, 1976) students who face failure as an outcome are less likely to put forth effort as high effort/failure gives greater indication of inability than low effort/failure. Second, performance-oriented

systems for accountability neglect to acknowledge the rates of efficiency of school systems as standardized expectations for performance do not acknowledge the variance in students' initial stock of knowledge (Hanushek, 2003).

The present accountability system established to measure academic achievement presents other points of conflict within education. While current reform efforts have greatly placed the burden for student achievement on teachers; Zimmerman (1990) notes the importance of personal initiative in learning. This notion which was reaffirmed by the former Secretary of Health, Education, and Welfare who suggested that the ultimate goal of the education system should be to shift to the individual the burden of pursuing his/her own education (Zimmerman, 1990, p. 4). Hidi and Harackiewicz (2000) reiterates that systems of reward/punishment create an additional conflict between the aims of the system and their practices. According to Hidi and Harackiewicz (2000) most school practices seek to control rather than motivate and promote performance competition rather than effort.

The theoretical rationale for excluding prior academic achievement is solidified by the findings of Bandura and Locke's (2003) meta-analysis of self-efficacy and goal effects. In this study, the researchers determine that the claim of efficacy simply being a reflection of prior performance has long lost its credibility as their findings reveal that self-efficacy independently affects levels of performance in numerous experiments by Schunk (1991) even after controlling for level of skill development and prior performance. Therefore, in acknowledgement of the theoretical groundings asserting efficacy to be a primary moderator of behavior and indication that efficacy

independently affects future attainment (Bandura & Locke, 2003) and moderates the impact of prior attainment (Bandura, 1989) it is not theoretically necessary to additionally account for prior attainment when seeking to determine influencers of behavior from an agentic perspective.

The design limitation that accounts for the exclusion of prior academic achievement is the nature of the database selected for this study that will be further described in chapter III. In order for the presentation of this study to lend itself to a progressive understanding of the factors being considered, it is important to note here that data collection method employed in the longitudinal study (ELS:2002-2004) began with a population of tenth grade students in 2002. Academic achievement was determined by administration of various academic tests at the initiation of the data collection process therefore, there is not a measure of prior academic achievement for tenth grade students in 2002. The achievement indicators gathered during the initial phase of data collection in 2002 provide a reference point for prior academic achievement in the follow-up process that took place once students progressed to twelfth grade in 2004. However, this study is limited to the consideration of tenth grade student responses, thus for the targeted population, this data set does not include a measure of prior academic achievement. The critical value of investigating tenth grade students was determined by the researcher to outweigh the possible detraction of excluding prior academic achievement. The relevance of targeting tenth grade students is further explained in the following section.

Implications

The intent of this study is to examine the relationships between variables that fall within the categories established in Bandura's (1989) matrix for triadic reciprocal causation. Thus, effort is established to be the targeted behavior under investigation in relationship to race, gender, socioeconomic status, academic efficacy, and belief in the meritocracy of the educational system. In accordance with the paradigmatic perspective assumed by the selected theoretical framework, this study will employ quantitative methods of inquiry. However, in recognition of the intraparadigmatic critiques presented by Guba and Lincoln (1994), this study relies heavily on its grounding in the present body of literature (Bowles & Gintis, 2002; Delpit, 1988; Johnson, et al., 2001; MacLeod, 1987; Tatum, 1997; Valenzuela, 1999; Venzant-Chambers, 2009) that contribute to the understanding of the constructed variables and the contextual factors potentially impacting the associated findings. This study seeks to establish a probable truth accepting that within the complex matrix of socially created contexts truths cannot be absolutely proven. The process conducted will investigate the relationships among variables posed as hypothesis that can relatively explain the situation in the given context with control of confounding variables. The degree to which the methodology and targeted population accord with the implications of the selected theoretical framework is in the following section.

This study seeks to examine causes that influence outcomes and thus succumbs to the need to reduce the ideas considered into a small, discrete set of variables that can be transformed into testable hypothesis and researchable questions. The grounding of

this study in a body of literature that contains both previous quantitative and qualitative investigations of similar phenomena provides reliable insight into the meanings assigned to the selected variables and attempts to detract from the design limitations of quantitative research.

Targeted population- tenth grade students

As described, this study aims to measure the extent to which race, gender, socioeconomic status, self-assessment of academic efficacy, and level of belief in the meritocracy of the educational system affect self-assessed academic effort. Therefore, it is critical that the targeted population for investigation has the cognitive ability to self-reflect and the forethought to symbolically perceive anticipated outcomes associated with their selected behaviors. There is a convergence among learning theorists (Bandura, 1989; Erikson, 1950; Piaget, 1964) as to the extent to which self-reflection, symbolic thought, abstract processing, and forethought are highly advanced cognitive processes that primarily develop during stages of adolescence and early adulthood. The requirements of the study lend themselves to targeting a population that has an acutely developed capacity for self-reflection and abstract mental operations (Piaget, 1964), and is advanced enough in the course of their educational careers to possess forethought about post-secondary outcome expectancies (Bandura, 1989). Per Erikson (1950), developing youths are confronted with problems of ideology and aristocracy, both as a defined world image and a predestined course of history. They must make sense of their roles as evidenced in the tangible promise of a “career” (Erikson, 1950, p. 261).

Bandura (1989) contributes this “envisioning of a career” to one’s ability for forethought. According to Bandura (1989), during the stage of adolescents, the task of choosing what life work to pursue is affected by self-judged capabilities (efficacy beliefs) which influence the range of career options seriously considered and the extent to which individuals exert themselves in pursuit of their perceived outcome expectancies. Thus, targeting tenth grade students as respondents in this study aligns with the implications of the theoretical frame of the study.

Additional rationale for the selection of tenth grade students resides in the degree to which tenth grade constitutes an important decisional point in the educational process (Bowers & Spratt, 2012). Research on high school drop outs indicates that 9th graders and high school students who are 16 years or younger are more likely than advanced and older students to leave high school because of academic failure, disciplinary problems, or employment opportunities, (Bowers & Spratt, 2012; Kennelly & Monrad, 2007; Schemo, 2006; Stearns & Glennie, 2006). “Throughout adolescents, teens make important decisions, not the least of which the decision whether to persist with formal education (Stearns & Glennie, 2006, p. 29). The longitudinal nature of the ELS:2002-2004 allows for investigation of twelfth grade students, however at that stage in their educational careers, students have already progressed past the point of commitment to the educational process by either dropping out or essentially completing the process. Targeting tenth graders for investigation in this study allows measures of efficacy, effort, and belief in meritocracy to be measured within a population of students who are at the pivotal point of decision-making as it relates to their commitment to the school system.

Summary

The complex nature of social science research necessitates the need for new inquiries to be sufficiently grounded in the guiding principles of established theoretical frameworks. However, the continued development of the field of educational research and the onset of newly accepted world views creates a context for conducting research that is still in a stage of formation. Therefore, there is a large burden placed on the researcher to look heavily toward the paradigmatic perspectives outlining what can be known and how it can be known when developing research designs. This study aligns with the view that what can be known are probable truths as determined through methods investigating the likely cause-effect relationships between variables. The act of identifying and selecting variables for consideration in this study is grounded in the principles of social cognitive theory, which presents a model of triadic reciprocal causation between behavior, cognitive and other personal factors and environmental influencers.

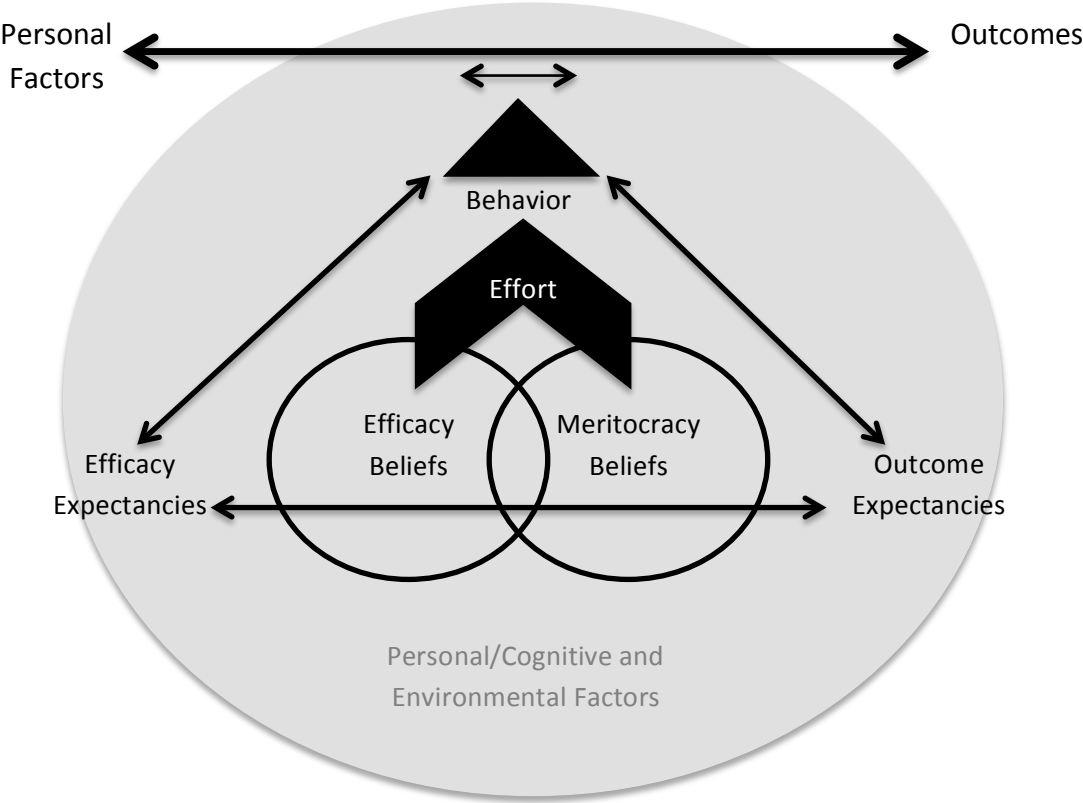
Social cognitive theory is selected from amongst other theories as the appropriate frame for study of academic effort. As posited by the theory, there is an essential function of agency that is derived from the interactions of the identified influencers. The utility of the agency derived is culturally constructed and thus diverse. Social cognitive theory introduces subsets of constructs for consideration as the theory itself acknowledges humans to be producers of cognitions affected by their interactions with the world around them. Thus, relevant principles from social reproduction theory and constructivist cognitive development theory are referenced to more fully understand the

relationships proposed between race, gender, socioeconomic status, academic-efficacy, level of belief in the educational system, and student academic effort.

The significance of this study is the novelty it adds to the present body of literature by positioning effort, which has previously been an underrepresented factor, as the dependent variable to be investigated. The significance of understanding effort is gained from the perspective that effort is a fundamental necessity for attainment of desired life outcomes. Additionally, the creation of a proxy measure for the merit an individual assigns to the educational system adds a novel variable to the present body of literature thus expounding upon the agentic function of efficacy and perceived power to affect desired outcomes as developed by Bandura and Locke (2003).

Figure 1 provides a graphic demonstration of the theoretical and conceptual framework for the relationships investigated in this study. As previously introduced, social cognitive theory positions behavior on a continuum between personal factors and outcomes, with efficacy expectancies and outcome expectancies serving as mediums for placement on the continuum. Additionally, both efficacy expectancies and outcome expectancies are influenced by the bidirectional relationships between behaviors, environmental factors, and personal/cognitive factors.

FIGURE 1. Graphic Model of Conceptual Framework



CHAPTER III

METHODOLOGY

Introduction

The proceeding section aims to provide a description of the data source from which variables were selected, and describe the variables themselves including a breakdown of the components of the factor variables created to represent student self-efficacy, level of belief in the meritocracy of the education system, and student academic effort. After identifying and describing variable elements, this section will detail the multistep analytic method and regression model employed in this study. Chapter III concludes with acknowledgement of the limitations and delimitations of the research process.

The following sections seek to present the method employed to answer the following research questions:

When controlling for race, gender, socioeconomic status, and the potential interaction between academic efficacy and belief in meritocracy:

- 1) Is there a positive relationship between academic-efficacy and academic effort?
- 2) Is there a positive relationship between level of belief in the meritocracy of education and academic effort?

Sample

The requirements of the study lend themselves to a population that has an acutely developed capacity for self-reflection and abstract mental operations (Piaget, 1964), and is advanced enough in the course of their educational careers to possess forethought about post-secondary outcome expectancies (Bandura, 1989). Therefore, the National Center for Educational Statistics Education Longitudinal Study (2002), (ELS:2002-2004), is selected as the data source for this study as it includes a sample of 15,325 tenth grade student respondents from 752 high schools across the fifty states and District of Columbia. Though the longitudinal data set provides access to information for twelfth grade students, the targeted population under investigation in this study is confined to students in tenth grade as prior research on the nature of high school drop outs depicts tenth grade to be a pivotal point of decision for students to withdraw from the process or commit to completion of formal schooling (Kennely & Monrad, 2007; Schemo, 2006; Stearns & Glennie, 2006). Students identified as having a native language other than English were included as participants if they had at least three years of prior English instruction or the school assessed them to be capable of meaningfully responding to the questionnaires. Students with mental or physical disabilities were provided with accommodations for participation with the exception of those whose individual education plans specified that they should not be subjected to participating in standardized assessments.

The schools included in the study were comprised of 586 public schools, 95 catholic schools, and 76 other private schools. 253 schools were urban, 363 were

suburban, and 141 were rural. Regional diversity included 134 schools from the Northwest region, 189 from the Midwest, 286 from the South, and 148 from the West. School size was measured by number of teachers on the campus. Approximately 52% of the schools included in the study had more than 60 teachers. Approximately 25% had between 31 and 60 teachers with the remaining 25% of schools contained in the study having 30 or fewer teachers. Approximately 47% of the students responding were male and 47% were female. Gender was not determined for students who skipped the question. The ELS:2002-2004 base year population included approximately 60 percent white, non-Hispanic respondents, .9 percent American Indian or Alaska Native respondents, 14 percent Black or African American, non-Hispanic respondents, 4 percent multicultural, non-Hispanic respondents, .2 percent native Hawaiian or other Pacific Islander, 4 percent Asian, non-Hispanic respondents, and 16 percent Hispanic or Latino respondents.

Data Source

The Education Longitudinal Study (2002), (ELS:2002-2004) was designed to track a national sample of students as they progressed from tenth grade to postsecondary education or the workforce. As such, the study contains data from the base year (2002) on 15,325 10th grade students. Subsequently, the follow up data for the year 2004 is available for 13,702 students. The ELS:2002-2004 dataset has two distinctive features, one being that it is a longitudinal study, and two being that it provides information

collected from multiple data sources including 13,488 parents, 7,135 teachers, 743 principals, and 718 librarians.

Data Collection

For inclusion in the study, sampled schools had to meet the criteria of having 10th grade students in the spring of 2002 and agree to make arrangements for a survey day. Of the 1,268 schools sampled, 1,221 were eligible for participation and 752 responded to the study. Given this context, the primary mode of data collection from students was administration of the survey items in traditional classroom settings by students' classroom teachers or other school personnel. Accommodations were allowed for those with specific need for specialized administration of the questionnaire. The initial administration of the questionnaire took place in the spring of 2002. This study utilizes the data gathered from the initial administration. A follow up questionnaire was given to the cohort of students in 2004 during their senior years of high school.

Variables

The literature reviewed for the study and principles of theoretical framework employed provides groundings for inclusion of race, gender, and socioeconomic status as each is considered to be socially constructed factor contributing to the development of cognitive and other personal factors and reflective of environmental factors that impact

efficacy expectancies and outcome expectancies of particular interest in this study. A description of each of the variables included in this study follows.

Student is Female: (BYS14) is a composite variable depicting the base year (2002) respondent's sex based on responses given to the student questionnaire for gender (male or female). Logical imputation based on first name, school roster, or other statistical imputation was employed for missing data upon original data input by NCES. For the purposes of comparing male and female gender groups, a pseudo variable was generated by recoding responses to Male = 0, Female =1.

Race: the BYRACE variable in the ELS:2002-2004 dataset was created from a composite of student responses, parent responses, and logical input based on surname and native language when student or parent responses were not available. The original BYRACE variable indicated multiple racial categories. From the information provided in the original BYRACE variable, independent pseudo-variable for "Student is Hispanic" was created for respondents who gave indication of: 1) Hispanic, no race specified, or 2) Hispanic, race specified. Additionally, a pseudo-variable was created for "Student is African American" for students who indicated Black or African American, non-Hispanic.

Socioeconomic Status: (BYSES1) is constructed from a composite of parent questionnaire data, student reports, and five equally weighted, standardized components including: father/guardian's education, mother/guardian's education, family income, father/guardian's occupation, and mother/guardian's occupation. The 1961 Duncan index was used for determining the occupation prestige values for the BYSES1 variable.

Information was gathered from parent and student questionnaires and imputed when missing. This is a standardized scale variable with a mean equal to zero and a standard deviation of one.

Academic-Efficacy: as described by Bandura (1977), efficacy relates to students' confidence in their own abilities to execute a course of action to achieve a desired outcome. Applicable measurements of students' belief in their abilities to be successful at difficult academic tasks were selected and factored to create a composite latent variable representing student academic-efficacy. The variable created as a measure of academic-efficacy includes student responses to the following survey items: How often do these things apply to you?

- When I sit myself down to learn something really hard, I can learn it; (BYS89E)
- When I study, I make sure that I remember the most important things; (BYS89G)
- If I decide not to get any bad grades, I can really do it; (BYS89N)
- If I decide not to get any problems wrong, I can really do it; (BYS89Q)
- If I want to learn something well, I can; (BYS89T)

Students were given choices of frequency ranging from almost never to almost always.

Belief in Meritocracy: to solicit a proxy measure comprised of students' perceived utility-value for schooling relative to outcome expectancies, the concept of

meritocracy is employed. Utilizing belief in the meritocracy of the system as a measure for expectancy-value beliefs aligns with Labaree's (1997) presentation of education as a private good or perceived by the educational consumer as a commodity for social mobility. This perspective of education is reinforced by Hanushek's (2003) assertion that quantity of education, more so than quality, is the present measurement for merit in relation to occupational attainment. Thus, the creation of this variable as a proxy for expectancy-values aims to measure the degree to which the educational system is perceived to have utility-value for post-secondary expectancies. Accordingly, indicators in the original ELS:2002-2004 dataset were selected for creation of a latent variable representing students' level of belief the meritocracy of education (or the degree to which participation in the system has merit in accordance with the distribution of desired life outcomes). The survey items shown below were initially selected based on presumed conceptual compatibility:

- School rules are fair (BYS21B)
- Education is important to get a job later (BYS27D)
- Learns skills for job in school (BYS27G)
- Plans to continue education after high school (BYS57)
- Studies to increase job opportunities (BYS89H)
- Studies to ensure financial security (BYS89P)

Principal component analysis resulted in three components extracted. With the aim of extracting one component, survey items BYS21B (School rules are fair) and BYS57 (Plans to continue education after high school) were excluded and principal component analysis was again used with the remaining four items. This produced one extracted component; however survey items BYS27D (Education is important to get a job later) and BYS27G (Learns skills for job in school) maintained unacceptably low loading values.

Further reflection upon the initially selected survey items provides multiple competing factors and reasons for statistical incompatibility. First, the response options available for the various questions were not congruent amongst the initial six items considered nor were responses for all items continuous in nature. Additionally, the context in which the various items were situated gave specific connotations to the survey items that may not be apparent when considering each item in isolation or in relation to the others relative to general belief in the meritocracy of the system. For example, survey item BYS21B (School rules are fair) was asked amongst questions specific to enforcement and assignment of disciplinary consequences. Survey items BYS27D (Education is important to get a job later) and BYS27G (Learns skills for job in school) were asked in context specific to post-secondary aspirations including specific number of years of school anticipated after high school and included response options indicating that school is not necessary for individual student's post-secondary career plans. Given the specificity of the context, consideration of students' responses to such survey items relative to belief in the merit of the education system would be more effectively

investigated through qualitative research methods, which are beyond the scope of this study. Therefore, an additional extraction analysis was performed including only the two survey items shown below resulting in the factor variable employed to reflect students' level of belief in the meritocracy of the education system:

- I study to increase my job opportunities; (BYS89H)
- I study to ensure my future will be financially secure; (BYS89P)

On the questionnaire, students were given options of frequency ranging from almost never to almost always.

Academic Effort: Effort serves as the dependent variable in this analysis. The effort variable measures student commitment of time, energy and/or attention to rigorous academic tasks. Previous investigations of effort have brought to attention subcomponents of stability/persistence, quality, and time-on-task. The measure of effort generated for this study encompasses aspects of stability, quantity, and quality of effort. A measure of student academic effort will be derived from students' responses to the following survey items: How often do these things apply to you?

- When studying, I try to work as hard as possible; (BYS89J)
- When studying, I keep working even when the material is difficult; (BYS89O)
- When studying, I try to do my best to acquire the knowledge and skills taught; (BYS89S)

- When studying I put forth my best effort; (BYS89V)

Students were given frequency options to select from ranging from almost never to almost always.

Interaction Variable: An interaction variable was created to account for the potential interaction between academic efficacy and belief in the meritocracy of the education system. Specific to the purpose of conducting a regression analysis, it is necessary to consider the extent to which the interaction between academic efficacy and belief in the meritocracy of the system interact thereby detracting from the otherwise assumed additive nature of each variable in relation to impact on academic effort.

Scaled Base Year Student Panel Weight: (BYSTWT) For the purpose of providing generalizations to the population of U.S. students, the data are weighted for base year students to account for potential disproportionalities resultant from the complex sample size and study design. As indicated by Osborne (2011), inclusion of appropriate weights is necessary to account for the design effects employed in large complex sampling. Specific to this sample set is the panel weight (BYSTUWT) as presented which counters the increased similarities and thus potentially skewed estimations resultant from the study design which included 15,325 students from 752 schools rather than the approximately 27,000 schools that met the established criteria within the United States (Osborne, 2011). For this study, BYSTWT was divided by 324.383 (the mean of the inflated sample size) bringing the scaled weighted sample size within closer range of the original population while retaining the representativeness of the population. As stated, “the general purpose of weighting is to compensate for the

unequal probabilities of selection into the sample and to adjust for the fact that not all school or individuals selected into the sample actually participated,” (Seastrom, 2003, p. 220). For all variables, missing data is excluded.

Factor Analysis

The nature of the questions utilized in the ELS:2002-2004 dataset were examined using exploratory factor analysis to determine whether there is statistical evidence to support the construction of latent variables for level of belief in the meritocracy of education, academic-efficacy, and effort. Statistical implications and qualitative grouping will be utilized to determine the number of components measured by the total number of items initially categorized as either level of student belief in the meritocracy of education, academic-efficacy, or effort. Deductive analysis in combination with practitioners’ standards for strength of correlations, internal reliability, and Eigenvalues produced using principal component extraction will be considered for inclusion in the latent variables.

Variables selected for inclusion were scrutinized for satisfaction of the assumptions required to conduct a valid factor analysis. These assumptions as outlined by Cohen, Cohen, West and Aiken (2003) are: multinormality, linearity, continuous data, exclusion of outliers, and absence of high multicollinearity. To establish satisfaction of the necessary assumptions a histogram of the residuals was referenced to determine evidence of normality and exclusion of outliers. Additionally, residual plots

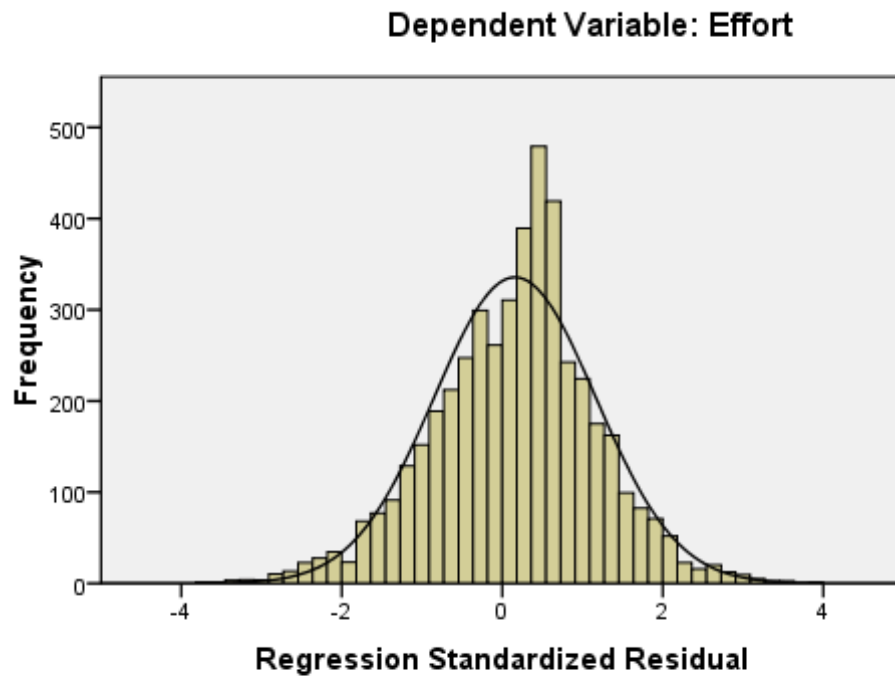
provided indication that assumptions of factor analysis have been met. Review of the original definitions provided in the ELS:2002-2004 technical manual confirm that all variables included in the study are continuous in nature. Bivariate correlations are considered to ensure there are not exceedingly strong linear relationships between any of the factor variables generated.

Multiple Regression Analysis

Multiple regression analysis was utilized to determine multivariate relationships between effort and multiple predictor variables while controlling for sociodemographic background variables relative to race, gender, socioeconomic status, and the interaction between academic efficacy and belief in the meritocracy of education. The analytic process conducted to evaluate the extent to which the study design provides appropriate application of factor analysis have been mirrored to evaluate the study design's satisfaction of the core assumptions of multiple regression analysis. Residual plots were constructed to evaluate linearity and equal variance among variables.

Normality is confirmed through creation of a histogram of residuals displayed in Figure 2. Independence of variables is granted through the integrity of the National Center for Educational Statistics and the nature in which the data was collected. To ensure satisfaction with the assumption of non-collinearity between predictor variables, bivariate correlations and scatter plots are employed. Analysis of the selected variables indicates satisfaction of assumptions have been met in the design of this study.

FIGURE 2. Histogram of Residuals for Selected Variables



Hypothesis

To address the research question presented, the following hypotheses have been derived from the empirical literature reviewed. Each hypothesis presented will be evaluated while controlling for variables of race, gender, and socioeconomic status and the interaction between academic efficacy and belief in meritocracy.

Null hypothesis:

N_1 : there is no relationship between academic effort and student being Hispanic.

N_2 : there is no relationship between academic effort and student being African American.

N_3 : there is no relationship between academic effort and student being female.

N_4 : there is no relationship between socioeconomic status and academic effort.

N_5 : there is no relationship between academic effort and academic efficacy.

N_6 : there is no relationship between academic effort and belief in meritocracy.

N_7 : there is no relationship between academic effort and the interaction between academic efficacy and belief in meritocracy.

Alternative hypothesis:

H_{A1} : there is a negative relationship between academic effort and student being Hispanic.

H_{A2} : there is a negative relationship between academic effort and student being African American.

H_{A3} : there is a negative relationship between academic effort and student being female.

H_{A4} : there is a positive, significant relationship between socioeconomic status and academic effort.

H_{A5} : there is a positive, significant relationship between academic effort and academic efficacy.

H_{A6} : there is positive, significant relationship between academic effort and belief in meritocracy.

H_{A7}: there is negligible relationship between academic effort and the interaction between academic efficacy and belief in meritocracy.

In brief, this study predicts that when controlling for the impact of student race, gender and socioeconomic status there are positive relationships between academic efficacy and academic effort, and belief in meritocracy and academic effort. It is predicted that the potential interaction between academic efficacy and belief in the meritocracy does not significantly detract from the additive nature of the other relationships predicted to exist between variables.

Conceptual Assumptions

As stated, investigation of each of the hypotheses presented above is the primary consideration of this study. However, it is critical to recognize that each of the hypotheses presented is founded upon relationships amongst the selected predictor variables that have already been established in prior research. Therefore, the following relationships are presented as assumptions of this study:

- having a minority race origin relates negatively to academic-efficacy (Bandura, 1989; Bourdieu & Passeron, 1977; Bowles & Gintis 2002; Doane & Bonilla-Silva, 2003; Moses, 2002; Ogbu, 1992; Stearns & Glennie, 2006);

- having minority race origin negatively relates to level of belief in the meritocracy of the education system (Bandura, 1977; Bourdieu & Passeron, 1977; Bowles & Gintis, 2002; Doane & Bonilla-Silva, 2003; MacLeod, 1987; Mickleson, 1990; Moses, 2002; Stearns & Glennie, 2006);
- socioeconomic status positively relates to academic-efficacy (Bandura, 1989; Bourdieu & Passeron, 1977; Bowles & Gintis, 2002; MacLeod, 1987);
- socioeconomic status relates positively to level of belief in the meritocracy of the education system (Bandura, 1989; Bourdieu & Passeron, 1977; Bowles & Gintis, 2002; MacLeod, 1987).

Model

Satisfaction of the assumption of a correct model is met by the extent to which the theoretical underpinnings of the study prove the selected model to be a sound fit for the articulated objective. This study aims to measure the extent to which race, gender, socioeconomic status, self-assessment of academic efficacy, and level belief in the meritocracy of the educational system affect self-assessed academic effort by reducing the ideas presented into a small, discrete set of variables that can be transformed into testable hypotheses (Creswell, 2003; Phillips & Burbules, 2000).

The primary research question derived from the theoretical grounding asks: What is the relationship between students' race, socioeconomic status, academic efficacy, acceptance of the meritocracy of the educational system and academic effort. Additionally, the additive nature of the relationships depicted through regression analysis presents the need to account for the potential interaction between the selected predictor variables of academic efficacy and belief in meritocracy. Therefore, the model of analysis for this study is the following regression equation:

$$Y_{\text{Effort}} = (X_i \times B_{\text{Hispanic}}) + (X_i \times B_{\text{African American}}) + (X_i \times B_{\text{gender}}) + (X_i \times B_{\text{Socioeconomic Status}}) + (X_i \times B_{\text{acceptance of meritocracy}}) + (X_i \times B_{\text{Efficacy}}) + (X_i \times B_{\text{Interaction between efficacy and acceptance of meritocracy}}) + e_i.$$

Limitations and Delimitations

Limitations of a study are those aspects of research that are beyond the researcher's control (Gall, Borg, & Gall, 2006). As it relates to this study, the researcher acknowledges the critique of quantitative research presented by Guba and Lincoln (1994) for the extent to which it strips selected subsets of variables from "the contexts that might, if allowed, exert their effects [and] greatly alter findings" (p. 106), and excludes variables from the meaning and purpose attached by human actors to their behaviors and activities. The grounding of this study in a body of literature that contains both previous quantitative and qualitative investigations of similar phenomena provides reliable insight into the meanings assigned to the selected variables and attempts to

detract slightly from the design limitations of quantitative research.

Delimitations describe the elements of the study that detract from the generalizations that can be made from the study (Gall, et al., 2006). This study investigates 10th grade students from high schools dispersed throughout multiple regions of the United States. The findings are intended to be a representation of the observed phenomena from a largely neutral context. Consideration of the same phenomena in more specific social contexts may vary as result of greater consideration given to more concentrated occurrences of the identified environmental influencers.

CHAPTER IV

PRESENTATION AND ANALYSIS OF THE DATA

Introduction

The purpose of this research is to determine the relationships between academic effort and academic efficacy, belief in meritocracy, and the selected control variables of race, gender, and socioeconomic status. The study employed data available from the ELS:2002-2004 data set and a method of exploratory factor analysis to create factor variables for academic effort, academic efficacy, and belief in the meritocracy of education. After assuring that statistical assumptions are fulfilled, multiple regression analysis is employed to determine the degree to which each predictor variable relates to varying levels of academic effort.

Descriptive Statistics

The predictor variables for this study, framed by social cognitive theory, include race, gender, socioeconomic status, academic efficacy, and belief in the meritocracy of education relative to academic effort. With the exception of the established control variables of race, gender, and socioeconomic status, the ELS:2002-2004 survey instrument provides respondents with discrete answer choices representing a continuous scale of frequency.

Table 1 provides a description of respondents' race. Upon application of a scaled weight for base year student respondents, the total population (*N*) equals 9,904 with 4,663 or 49.7% being female and 4,722 or 50.3% being male.

TABLE 1. Gender of Respondents

| Gender | Number of Respondents |
|---------------|------------------------------|
| M | 4722 |
| F | 4663 |

Table 2 presents the frequency of responses relative to race. Of the total sample population 1,288 respondents selected Black or African American, non-Hispanic. Of the remaining sample population 1,416 selected either Hispanic with race specified or Hispanic with no race specified.

TABLE 2. Race of Respondents

| Race | Number of Respondents |
|------------------|------------------------------|
| African American | 1288 |
| Hispanic | 1416 |
| White and Other | 7220 |

Descriptive statistics for socioeconomic status reveal a standardized mean of .132 with a median of .100 and mode of .55 (indicating the potential for a right tailed skew that is not reflected in the variable's histogram shown in Figure 3). This variable has a standard deviation of .627, with a range of 2.81. This is represented in Table 3.

TABLE 3. Descriptive Statistics for Socioeconomic Status

| Variable | N | Minimum | Maximum | Mean | Mode | Std. Deviation |
|----------------------|------|---------|---------|------|------|----------------|
| Socioeconomic Status | 8513 | -.99 | 1.82 | .134 | .55 | .627 |

FIGURE 3. Socioeconomic Status Histogram

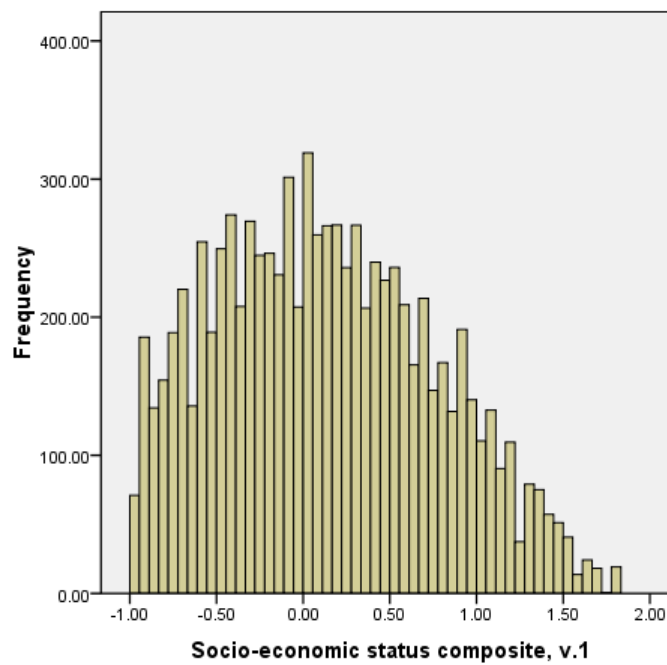


Table 4 contains descriptive statistics relative to academic efficacy, belief in meritocracy, and academic effort. Academic efficacy displays a range from -.966 to 1.639, a mean of .333 and a mode of 1.639. The standard deviation for academic efficacy is .770. Belief in the meritocracy of education demonstrated a range of -.790 to 1.464 with a mean of .221, a mode of -.788, and a standard deviation of .817. Academic effort presents a range of -.998 to 1.694 with a mean of .173, a mode of -.998, and a standard deviation of .868. The negative mode for belief in meritocracy and academic effort depicts that there were inclusions of imputation for missing variables based on the following scale: (-4) nonrespondents, (-6) multiple responses, (-7) partial interview-breakoff, (-8) survey component legitimate skip, (-9) missing.

TABLE 4. Descriptive Statistics for Academic Efficacy, Belief in Meritocracy, and Academic Effort

| Variable | N | Minimum | Maximum | Mean | Mode | Std. Deviation |
|-----------------------|----------|----------------|----------------|-------------|-------------|-----------------------|
| Academic Efficacy | 5273 | -.966 | 1.639 | .333 | 1.639 | .770 |
| Belief in Meritocracy | 5799 | -.790 | 1.464 | .221 | -.788 | .817 |
| Academic Effort | 5931 | -.998 | 1.694 | .173 | -.998 | .868 |

Table 5 presents the descriptive statistics for the interaction term determined to exist between academic efficacy and belief in meritocracy. The interaction variable

maintains a range of -1.38 to 2.40 with a mean of .455, a mode of 2.40, and a standard deviation of .815.

TABLE 5. Descriptive Statistics for the Interaction between Academic Effort and Belief in Meritocracy

| Variable | N | Minimum | Maximum | Mean | Mode | Std. Deviation |
|----------------------|----------|----------------|----------------|-------------|-------------|-----------------------|
| Interaction Variable | 4736 | -1.38 | 2.40 | .455 | 2.40 | .815 |

Exploratory Factor Analysis

Academic efficacy

Communalities for the variables selected for inclusion in the latent variable for academic-efficacy can be found in Table 6. The combination of these variables produced a Cronbach's alpha score of .856 indicating a high level in internal reliability among these variables. The extraction of one component produced an Eigenvalue of 3.177. As a composite latent variable, academic-efficacy produced a mean of .333 with a standard deviation of .770. The low mode of 2.4 reveals a high concentration of students who responded within the range of "almost never" to "sometimes" when measuring the frequency in which they feel confident in their own abilities to learn rigorous academic content. This reveals a low overall level of student academic-efficacy.

TABLE 6. Communalities for Academic Efficacy

| Survey Item | Extraction |
|--|------------|
| Can learn something really hard | .634 |
| Remembers most important things when studies | .591 |
| Can get no bad grades if decides to | .657 |
| Can get no problems wrong if decides to | .574 |
| Can learn something well if wants to | .721 |

Table 7 contains the correlations between survey items selected to comprise the factor variable measuring level of students' self-assessed academic efficacy.

Correlations between variables range from .433 to .632 significant at the .01 level.

TABLE 7. Inter-Item Correlation Matrix for Academic Efficacy

| | Remember s most important things when studies | Can get no bad grades if decides to | Can get no problems wrong if decides to | Can learn something well if wants to |
|--|--|--|--|---|
| Can learn something really hard | .561 | .525 | .493 | .594 |
| Remembers most important things when studies | | .522 | .433 | .560 |
| Can get no bad grades if decides to | | | .541 | .632 |
| Can get no problems wrong if decides to | | | | .571 |

Belief in meritocracy

The factor variable for belief in the meritocracy of education produced a Cronbach's alpha score of .824 indicating internal reliability for the variables. Principal component extraction produced one component with an Eigenvalue of 1.701. As a composite latent variable, level of acceptance of the meritocracy of education maintains a mean of .221 with a standard deviation of .816. Given that the lowest end of the discrete responses available represented "almost never", the low mean of this variable reflects a high concentration of respondents who "almost never" put forth academic effort with expectations of economic advancement as a return. This reveals a low level of acceptance of the meritocracy of education.

Table 8 contains the communalities for survey items selected for inclusion in the factor variable generated as measure of students' level of belief in the meritocracy of education.

TABLE 8. Communalities for Belief in Meritocracy

| Survey Item | Extraction |
|---------------------------------------|-------------------|
| Studies to increase job opportunities | .850 |
| Studies to ensure financial security | .850 |

Table 9 contains the inter-item correlation matrix for variables comprising belief in the meritocracy of education. The correlation between the two variables selected for inclusion in this latent variable was .701, significant at the .01 level.

TABLE 9. Inter-Item Correlation Matrix for Belief in Meritocracy

| | Studies to ensure financial security |
|---------------------------------------|--------------------------------------|
| Studies to increase job opportunities | .701 |

Academic effort

The combination of variables included in formation of the latent variable for academic effort produced a Cronbach's alpha score of .874 indicating strong internal reliability of the variables selected. Use of principal component extraction produced one component with an Eigenvalue of 2.9. As a composite latent variable, Effort produced a mean of .173 with a standard deviation of .868. Considering the continuum of frequency correlated with the discrete responses, a low mean reflects a large concentration of respondents who "almost never" commit authentic effort to the aim of completing rigorous academic tasks.

Table 10 contains the communalities for survey items selected for inclusion in the factor variable generated as measure of students' level of academic effort.

TABLE 10. Communalities for Academic Effort

| Survey Item | Extraction |
|--|------------|
| Works as hard as possible when studies | .724 |
| Keeps studying even if material is difficult | .690 |
| Does best to learn what studies | .730 |
| Puts forth best effort when studying | .755 |

Table 11 contains the inter-item correlation matrix for variables comprising belief in the meritocracy of education. The correlations between the variables selected for inclusion in this latent variable range from .594 to .692, significant at the .01level.

TABLE 11. Inter-Item Correlation Matrix for Academic Effort

| | Keeps studying even if material is difficult | Does best to learn what studies | Puts forth best effort when studying |
|--|---|---------------------------------------|--|
| Works as hard as possible when studies | .594 | .615 | .692 |
| Keeps studying even if material is difficult | | .640 | .608 |
| Does best to learn what studies | | | .656 |

Bivariate Correlations between Variables

Correlation coefficients (Pearson's r) were used to assess bivariate relationships among selected predictor variables. Resulting correlations indicated the strongest relationship was between belief in meritocracy of education and academic effort with a positive correlation of .678. A strong correlation existed between academic efficacy and academic effort with a positive correlation of .671. Also producing a strong positive correlation was the interaction term between belief in meritocracy and self-efficacy, which demonstrated a .533 correlation with academic effort. Other variables considered in this analysis were moderate-to-weak. Correlations between socioeconomic status,

student being Hispanic, student being African American, student being female and levels of belief in meritocracy, self-efficacy and effort fell within the range of -.026 to .101.

Table 12 provides complete bivariate correlation results.

TABLE 12. Correlations between Variables Included in Multiple Regression Analysis

| | Female | Hispanic | African American | Academic Efficacy | Belief in Meritocracy | Interaction Variable | Academic Effort |
|-----------------------|--------|----------|------------------|-------------------|-----------------------|----------------------|-----------------|
| Socio-economic Status | -.014 | -.174 | -.140 | .134 | .127 | .061 | -.014 |
| Female | | .013 | -.010 | -.026* | .050** | -.019 | .101** |
| Hispanic | | | -.158** | -.019* | -.004 | .010 | .005 |
| African American | | | | .010 | .000 | .022 | .023* |
| Academic Efficacy | | | | | .535** | .579** | .671** |
| Belief in Meritocracy | | | | | | .628** | .678** |
| Interaction Variable | | | | | | | .533** |

Note: *p < .05, ** p<.01

Multiple Regression Analysis

Multiple regression analysis was used to determine the relationships between effort and the multiple predictor variables (race, gender, socioeconomic status, belief in meritocracy, academic efficacy, and the interaction between belief in meritocracy and academic efficacy). Table 13 presents the regression coefficients for predictor variable in relationship to academic effort.

TABLE 13. Regression Coefficients

| | Unstandardized B | Unstandardized Std. Error | Standardized Beta | t | Sig. |
|--------------------------|---------------------|------------------------------|----------------------|--------|------|
| (Constant) | -.191 | .021 | | -9.089 | .000 |
| Socioeconomic Status | -3.597 | .014 | .000 | -.003 | .998 |
| Female | .157 | .017 | .090 | 9.450 | .000 |
| Hispanic | .041 | .024 | .017 | 1.691 | .091 |
| African American | .057 | .025 | .022 | 2.226 | .024 |
| Academic Efficacy | .490 | .014 | .435 | 35.727 | .000 |
| Belief in Meritocracy | .463 | .014 | .435 | 34.022 | .000 |
| Interaction Variable | .009 | .014 | .009 | .676 | .499 |

Dependent Variable: Effort

Amongst the predictor variables, self-efficacy and student level of acceptance of the meritocracy of education were revealed to be the largest predictors of student academic effort. Accordingly, one standard deviation of change in either self-efficacy or belief in the meritocracy of education correlates with a .435 standard deviation of change in student academic effort. The regression analysis revealed statistically significant relationships between the being African American and academic effort, and between being female and academic effort. However, neither relationship indicated relevant impact. Non-significant relationships were determined between the additional control variables (being Hispanic and socioeconomic status) and academic effort. The only negative relationship determined was between socioeconomic status and effort. With the exception of the indicated direction of the relationship, the numeric unit of change affected upon the dependent variable was not significant. The complete model of

predictor variables indicating the progressions of the percentage of variance explained by the selected control variables, academic efficacy, and belief in meritocracy is provided in Table 14. Overall, the model employed in this study produced an adjusted R^2 value of .601 indicating that the variables selected accounted for 60 percent of the change in the dependent variable (effort). Table 14 presents the complete model summary.

TABLE 14. Model Summary

| Model | Variables Entered | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|-------|---|------|----------|-------------------|----------------------------|
| 1 | Student is Female, Student is African American, Socioeconomic status, Student is Hispanic | .156 | .024 | .023 | .858 |
| 2 | Academic Efficacy | .682 | .465 | .464 | .635 |
| 3 | Belief in Meritocracy | .775 | .601 | .601 | .548 |
| 4 | Interaction Component | .775 | .601 | .601 | .548 |

TABLE 15. ANOVA

| Model | Sum of Squares | df | Mean Square | F | Sig. |
|------------|----------------|------|-------------|---------|------|
| Regression | 2001.903 | 8 | 250.238 | 831.574 | .000 |
| Residual | 1327.457 | 4411 | .301 | | |
| Total | 3329.360 | 4419 | | | |

Results of Research Questions

Control variables

The research questions were presented with acknowledgement of predicted impact of the selected control variables. As noted previously, in accordance with theories of cultural capital (Delpit, 1988; Tatum, 1997; Valenzuela, 1999), social reproduction (Bowles & Gintis, 2002; MacLeod, 1987) and an evidenced achievement gap (Venzant-Chambers, 2009), it was assumed that negative relationships would exist between the selected control variables of race, gender, and socioeconomic status and academic effort. Prior to progressing into discussion of specific research questions, it is necessary to consider the relationships depicted between selected control variables and predictor variables, and selected control variables and academic effort.

Race

As shown in Table 13, the impact of being Hispanic was not significant in relationship to effort. Though the strength of the relationship depicted between being Hispanic and academic effort was weak, the directionality of the relationships indicated by the correlations between being Hispanic and academic efficacy, belief in the meritocracy of education, and academic effort accorded with the relationships assumed based on the previously presented body of literature and theoretical perspectives (Valenzuela, 1999; Delpit, 1988; Doane & Bonilla-Silva, 2003). Table 12 depicts a weak, negative correlation (-.004) between being Hispanic and academic efficacy and a weak, negative correlation (-.019) between being Hispanic and belief in the meritocracy

of education. The negative direction depicted in the correlations between these variables, while statistically non-significant, confirms that rationale presented in prior literature. Because of the predicted and confirmed negative correlation between being Hispanic and varying levels of efficacy and belief in meritocracy, it was anticipated that being Hispanic would negatively correlate with academic effort. However, a weak, positive correlation (.005) was revealed between being Hispanic and academic effort in comparison to that of the control group. Therefore, the directionality of this relationship warrants further investigation more acutely targeted toward this population.

The impact of being African American was not statistically significant at the .01 level but was statistically significant at a level of .05. As depicted in Table 13 the impact of being African American relative to academic effort maintains a standardized beta of .022 at a level of significance of .024. Though .024 can be considered statistically significant, the associated level of variance on level of academic effort as impacted by being African American is negligible in consideration of practical implication. Similar to the discussion of the impact of being Hispanic, what is of relevant consideration is the directionality of the correlations depicted between being African American and the predictor variables of academic efficacy and belief in the meritocracy of education. The correlation between African American race and academic effort was assumed to be a negative relationship based on the prior literature that critiques the continued negative impact of racism in schools (Akom, 2008; Delpit, 1988; Doane & Bonilla-Silva, 2003; Ogbu, 1992; Ogbu & Simons, 1998). However, the correlation between African American race and belief in meritocracy was neutral (.000),

while a positive correlation was found between being African American and academic efficacy (.010) and academic effort (.023), (see Table 12). As noted in the discussion of the impact of being Hispanic, the directionality of the relationships depicted for the impact of being African American warrant further investigation.

Gender

The impact of being female relative to effort was statistically significant (.000) at the level of .01 but did not demonstrate a practical impact. In comparison to the control group, being female had a negligible standardized beta of .090 indicating little difference in effort relative to gender. As shown in Table 12, a weak positive correlation (.050) existed between being female and belief in the meritocracy of education. A weak, negative correlation (-.026) was revealed between being female and academic efficacy. A weak, positive correlation (.101) was found between being female and academic effort. In sum, gender has little impact when considering levels of academic efficacy, belief in the meritocracy of education, and academic effort. However, there is room for further research to determine the possible cause of a negative correlation between being female and academic efficacy.

Socioeconomic status

Socioeconomic status was revealed to be non-significant relative to academic effort with a standardized beta of .000 at a level of significance of .998 (see Table 13). Review of the present body of empirical literature (Bourdieu & Passeron, 1977; Bowles & Gintis, 2002; MacLeod, 1987) lent to the assumption that there would be significant,

positive relationships between varying levels of socioeconomic status and academic efficacy, belief in the meritocracy of education, and resultant levels of academic effort. Positive relationships would indicate that as socioeconomic status raises so do levels of academic efficacy, belief in meritocracy, and academic effort.

While the correlations between socioeconomic status and the selected predictor variables were positive (see Table 12), the causal relationship depicted in the regression analysis gave indication of a negative relationship between socioeconomic status and academic effort with a neutral standardized beta of .000. Finding that the impact of socioeconomic status is non-significant relative to effort provides grounds for further research. If verified, this notion runs counter to theories grounding disparities in attainment on premise of generational poverty. Additionally, determining socioeconomic status to be non-significant relative to effort reinforces Bandura and Locke's (2003) assertion that efficacy is a greater moderator of human agency than familial economic status.

Analysis of research question 1

Is there a positive relationship between academic-efficacy and academic effort?

As stated earlier in this chapter, respondents were administered a survey with multiple items inclusive of those selected to comprise a proxy measure for academic efficacy. The items included as a measure of students' self-assessed levels of academic efficacy asked: How often do these things apply to you?

- When I sit myself down to learn something really hard, I can learn it,

- When I study, I make sure that I remember the most important things,
- If I decide not to get any bad grades, I can really do it,
- If I want to learn something well, I can,
- If I decide not to get any problems wrong, I can really do it,

Participants were given response options of: (1) almost never, (2) sometimes, (3) often, (4) almost always.

Table 4 shows that the factor variable for academic efficacy comprised of students' responses to the items shown above had a mean of .333 and mode of 1.693 with a standard deviation of .370. The relative low mode depicts an overall low level of academic efficacy for the tenth grade student participants. The low level of academic efficacy corresponds with subsequent measures of low levels of academic effort. The implications of the low levels of efficacy and low levels of effort will be further discussed in Chapter V. However, equally important to the discussion of the findings relative to the measure of academic efficacy are correlations found to exist between the selected control variables, other predictor variables and the dependent variable of academic effort. The correlations between academic efficacy and other variables are shown in Table 16.

TABLE 16. Correlations Relevant to Academic Efficacy

| | | Socio- economy c Status | Female | Hispanic | African America n | Belief in Meritocr acy | Interacti on Variable | Effort |
|----------------------|------------------------|-------------------------------|--------|----------|-------------------------|------------------------------|-----------------------------|--------|
| Academic Efficacy | Pearson Correlation | .134 | -.026 | -.019 | .010 | .535 | .579 | .671 |
| | Sig. (2-tailed) | .000 | .063 | .168 | .451 | .000 | .000 | .000 |
| | N | 4930 | 5273 | 5273 | 5273 | 4736 | 4736 | 4930 |

The correlations between academic efficacy and socioeconomic status, belief in meritocracy, the interaction component, and effort are all significant at a level of .01. The extent to which the correlation between these variables is positive and significant is further examined through the regression analysis conducted to better understand potential causal relationships among predictor variables and academic effort. Prior to fully addressing the degree to which the regression analysis answers the identified research questions, it is critical to note that the strength and significance of the correlations found between academic efficacy and belief in the meritocracy of the system (as depicted in Table 16) does warrant further investigation to determine if a causal relationship exists between belief in one's self and belief in the ability of the system to affect established levels of desired attainment.

As noted earlier in this chapter, the regression equation applied to the variables selected produced indication there is a positive and significant causal relationship between academic efficacy and academic effort. Specifically, the presence of a .435 standardized Beta for academic efficacy relative to the dependent variable of effort

indicates that for every one standard deviation change in a students' level of academic efficacy there is a .435 change in students' academic effort. The percentage of variance explained by the model employed magnifies the significance of the individual degree of variance amongst these two variables as considering variance in academic efficacy and belief in the meritocracy of education, while controlling for features of race, gender, and socioeconomic status, accounts for approximately 60% of the variance observed in levels of academic effort.

The relatively insignificant impact of the control variables relative to academic effort in comparison to the impact of academic efficacy serve to confirm and expand upon the foundational works on efficacy previously referenced in the review of relevant literature that position efficacy as the primary moderator of the function of human agency. Interestingly, efficacy beliefs were coupled in strength by students' beliefs in the meritocracy of the system relative to levels of academic effort. This will further be discussed in response to the second research question posed for the purposes of this study.

Analysis of research question 2

Is there a positive relationship between level of belief in the meritocracy of education and academic effort?

As described in chapter III, though multiple other survey items were initially considered for presumed conceptual compatibility as a composite measure of merit, the initial six survey items considered did not statistically produce a single principal

component with inter-item reliability. Therefore, the factor variable generated to serve as a proxy measure for students' varying levels of belief in the merit of education was comprised of participants' responses to the following survey items. Respondents were asked: How often do these things apply to you?

- I study to increase my job opportunities,
- I study to ensure that my future will be financially secure,

Students were given the following response options: (1) almost never, (2) sometimes, (3) often, (4) almost always.

The correlations found between belief in the meritocracy of education and other variables considered are shown in Table 17. Statistically significant correlations were found to exist between belief in the meritocracy of education and socioeconomic status, being female, academic efficacy, the interaction component between belief in meritocracy and academic efficacy, and academic effort.

TABLE 17. Correlations Relevant to Belief in Meritocracy

| | | Female | Hispanic | African American | Academic Efficacy | Interaction Variable | Effort | |
|-----------------------|---------------------|--------|----------|------------------|-------------------|----------------------|--------|------|
| Belief in Meritocracy | Pearson Correlation | .127 | .050 | -.004 | .000 | .535 | .628 | .678 |
| | Sig. (2-tailed) | .000 | .000 | .781 | .948 | .000 | .000 | .000 |
| | N | 5368 | 5799 | 5799 | 5799 | 4736 | 4736 | 5392 |

Within the regression model, missing data was excluded pairwise; therefore for the purposes of examining this variable independently from its role in the regression equation it is important to note the nature of students' non-responses. As discussed in the previous descriptive of this variable relative to the total population ($N = 9,904$) was reduced to ($N = 5,799$) based on legitimate survey responses to the items selected for inclusion in the proxy measure for belief in the meritocracy of education.

Given the pairwise exclusions of missing data, there was a positive and significant causal relationship found between varying levels of students' belief in the merit of participating in the educational process for anticipated future attainment and students' levels of academic effort. Belief in meritocracy presented a standardized Beta of .435, indicating that a one standard deviation in change in belief in the meritocracy of education corresponds with a .435 degree of change in academic effort. The indication that academic efficacy and belief in the meritocracy in education have equivalent impact relative to academic effort and the additive nature assumed by relationship presented through regression analysis generated the need to examine the possible impact of the interaction between academic efficacy and belief in meritocracy when added to the regression model.

Interaction variable

When attempting to statistically determine potential causal relationships between variables through a method of multiple regression, it is important to determine if an interaction between two predictor variables simultaneously influences the third

dependent variable as regression equations present an additive approach to determining cumulative impact on the dependent variable. Therefore, in an effort to determine the degree to which academic efficacy potentially moderates the other predictor variable of belief in meritocracy, an interaction component was created as described in Chapter III. Within the regression model, the interaction between academic efficacy and belief in meritocracy presented a standardized beta of .009 but was not statistically significant as it revealed a level of significance of .499. The strength and significance of the correlations between academic efficacy, belief in meritocracy, and the interaction component determined to exist between the two leave this component open to future investigation. However for the purposes of this model, the interaction between the two predictor variables was determined to be non-significant indicating that the moderation of one predictor variable upon the other does not add to or detract from the magnitude of the causal relationships found to exist between the selected predictor variables and other controls relative to resultant levels of variance in academic effort.

Summary

The varying capacities to which effort has been considered in past research presented vastly divergent modes of measurement of academic effort. As Bandura (1989) noted in development of the notion of human agency, general application of agency gives way to a broader interpretation of the motivation and stability of self-regulated actions. Therefore, this study aimed to measure effort as a general

commitment to individual input into the educational process. The factor variable generated for effort was comprised of students' responses to: How often do these things apply to you

- When studying, I work as hard as possible,
- When studying, I keep working even if the material is difficult,
- When studying, I try to do my best to acquire the knowledge and skills taught,
- When studying, I put forth my best effort;

Students were given the following response options: (1) almost never, (2) sometimes, (3) often, (4) almost always.

As depicted in Table 4, the measure for academic effort produced a mode of -.998, and a standard deviation of .868. Similar to the occurrence in responses with belief in the meritocracy of the system, the negative mode depicts the following values inputted for missing data: (-4) nonrespondent, (-6) multiple responses, (-7) partial interview-break off, (-8) survey component legitimate skip, (-9) missing. Because missing data was excluded pairwise for the purposes of applying the regression equation, of the 9,904 eligible respondents, 5,931 responses were included in the measure for academic effort. Elimination of missing data through pairwise measures maintains a mean of .173 for eligible responses giving indication of an overall low level of commitment of academic effort from 10th grade students' respondents.

As it relates specifically to the hypothesis presented in this study, the data indicates rejection of the following alternative hypothesis:

H_{A1} : there is a negative relationship between academic effort and student being Hispanic.

H_{A2} : there is a negative relationship between academic effort and student being African American.

H_{A3} : there is a negative relationship between academic effort and student being female.

H_{A4} : there is a positive, significant relationship between socioeconomic status and academic effort.

As presented, the data fails to reject the remaining alternative hypothesis as originally presented:

H_{A5} : there is a positive, significant relationship between academic effort and academic efficacy.

H_{A6} : there is positive, significant relationship between academic effort and belief in meritocracy.

H_{A7} : there is negligible relationship between academic effort and the interaction between academic efficacy and belief in meritocracy.

By indication of the nature to which the data fails to reject the later alternative hypothesis, the positive relationship predicted to exist between academic efficacy and academic effort and the positive relationship between belief in the meritocracy of education and academic effort are affirmed by the magnitude and directionality of the causal relationships depicted through the regression analysis.

The overall low levels of effort depicted by the measures in this study reinforce the propagations of Babcock (2011), Compton et al., (2009) who assert that American students today exert less effort than previous generations and less effort than their international counterparts. To reiterate what has been expressed in chapters I and II, this becomes significant when coupled with the notion that to learn more students have to work harder. Yet very little research has concentrated on understanding influencers of effort as an independent aim of the educational process aside from the role that effort plays as a means toward an end of performance on academic achievement tests.

The factor variables included in this study as proxies for academic efficacy, belief in meritocracy, and academic effort were generated with the aim of gaining an understanding of students' general dispositions toward educational processes more so than toward specific isolated instances of time on task. The general measures employed revealed relatively low levels of academic-efficacy, belief in the meritocracy of education, and academic effort. These phenomena warrant further investigation. The prongs of this research that lend themselves to practical application and groundings for future research reside specifically in the following findings revealed through the data as presented:

- 1) The selected control variables of race, gender and socioeconomic status were determined to be inconsequential relative to varying levels of academic efficacy, belief in the meritocracy of education, and academic effort.
- 2) A positive and significant causal relationship is established to exist between levels of academic efficacy and academic effort.

- 3) A positive and significant causal relationship is established to exist between level of belief in the meritocracy of education and academic effort.
- 4) The interaction component between academic efficacy and belief in meritocracy does not detract from the magnitude of the impact determined for the identified prediction variables on academic effort.

Each of the core findings summarized above will be expounded upon in Chapter V as each holds implications for practical application in educational policies and pedagogies and points of interest for future research.

CHAPTER V

SUMMARY AND CONCLUSIONS

Introduction

The purpose of this study was to investigate the relationship between academic effort and predictor variables of academic efficacy and belief in the meritocracy of education while controlling for race, gender, socioeconomic status, the impact of the interaction between academic efficacy and belief in the meritocracy of education. Levels of academic efficacy, belief in the meritocracy of education, and academic effort were determined by tenth grade students' responses to individual items on the ELS:2002-2004 survey.

A review of literature was conducted to situate this investigation as an extension of the existing conversation regarding student academic efficacy and academic effort. The literature reviewed provided a cumulative and comprehensive look at academic efficacy and the degree to which it serves as a moderator of other variables theoretically posed as impacting behavior and performance. The literature reviewed relative to student academic effort provided multiple theoretical perspectives and measures for academic effort. Because effort has not been a primary variable of investigation the available literature failed to provide a progressive understanding of identifiable influencers of student academic effort. To select from the multitude of variables presented in the literature relative to academic effort, social cognitive theory and the lens of efficacy as a

moderator of behavior was employed to determine potential influencers. The following research questions were posed to guide this research:

- 1) Is there a positive relationship between academic-efficacy and academic effort?
- 2) Is there a positive relationship between level of belief in the meritocracy of education and academic effort?

The above questions were investigated while controlling for the characteristics of race, gender, socioeconomic status, and the interaction between academic efficacy and belief in the meritocracy of education.

Summary of Findings

The following is a review of the findings for each research question and for the predicted impact of the established control variables.

1. There are weak and non-significant relationships relative to practical impact between the selected control variables of race, gender, and socioeconomic status and the factor variables generated for academic efficacy, belief in the meritocracy of education, and academic effort.

Findings from the inclusion of the selected control variables revealed a weak, negative correlation between being Hispanic and academic efficacy, and a weak,

negative correlation between being Hispanic and belief in the meritocracy of education. Though the relationships were depicted as statistically non-significant, the directionality of the relationship between race the corresponding predictor variables for academic efficacy and belief in the meritocracy of education confirm the rationales presented in prior literature relative to race and education. However, a weak, positive correlation of .005 was revealed between being Hispanic and academic effort. The unanticipated positive direction of this relationship will be discussed later in this chapter as reason for further investigation.

The impact of being African American relative to academic effort was negligible in consideration of practical implication. The positive directionality of the correlations depicted between being African American and the selected predictor variables of academic efficacy and belief in the meritocracy of education warrants further investigation as the implications of a positive relationship counters the notions presented in prior literature that critique the negative impact of continued racism in schools and educator pedagogies.

Gender had little impact on corresponding levels of academic efficacy, belief in the meritocracy of education, and academic effort. However, the negative directionality of the correlation found between being female and academic efficacy does warrant further investigation.

Socioeconomic status was revealed to be non-significant relative to academic effort. The insignificance of the impact of socioeconomic status warrants further investigation as will be discussed later in this chapter as this concept counters the present

theories that attribute gaps in achievement to generational poverty while confirming the assertions of Bandura and Locke (2003) indicating that efficacy is the greatest moderator of individual attainment.

As previously presented, an interaction variable was created to statistically account for the degree to which the interaction between academic efficacy and belief in the meritocracy of education influence academic effort. Within the regression model employed in this study, the interaction component was not statistically significant indicating that the moderation of the one predictor variable upon the other does not add or detract from the magnitude of the causal relationships found to exist between academic efficacy and academic effort and between belief in the meritocracy of education and academic effort.

2. There is a statistically significant positive relationship between student academic efficacy and student academic effort as measured by tenth grade students' self-assessment of each on the selected items from the ELS:2002-2004 survey.

The items selected through exploratory factor analysis as a proxy measure for students' self-assessment of academic efficacy included responses to how often students feel they can: *learn something really hard, remember most important things, not get any bad grades, learn something well, and not get any problems wrong*. Respondents were given response options ranging from almost never to almost always. The modal score of 1.693 depicted a relative low level of academic efficacy. Statistically significant

correlations were found to exist between academic efficacy and socioeconomic status, belief in the meritocracy of education, and academic effort. The regression equation applied to the variables provided indication of a positive and significant linear relationship between academic efficacy and academic effort. It is important to note, that as with the measure of academic efficacy, academic effort maintained a low modal score indicating relatively low levels of general academic effort.

3. There is a statistically significant positive relationship between students' belief in the meritocracy of education and student academic effort as measured by tenth grade students' self-assessment of each on the selected items from the ELS:2002-2004 survey.

The use of exploratory factor analysis generated a proxy measure for students' belief in the meritocracy of education inclusive of students' responses to how frequently the following items applied to them: *I study to increase my job opportunities*, and *I study to ensure that my future will be financially secure*. Students were given response options ranging from almost never to almost always. As noted with academic efficacy and academic effort, the low modal score for belief in the meritocracy of education indicates of low levels of application for the scenarios presented in the survey items. Statistically significant correlations were found to exist between belief in the meritocracy of education and socioeconomic status, gender, academic efficacy, and academic effort. The model for regression analysis employed revealed a positive linear relationship between belief in the meritocracy of education and student academic effort.

Conclusions

The review of literature presented and the analysis conducted by this researcher allows for the following conclusions to be drawn about the influencers of student academic effort as measured by tenth grade students' responses to items on the ELS:2002-2004 national data survey:

1. Student academic efficacy is a significant moderator of student academic effort.

This conclusion aligns with the progressive and comprehensive assertions made in the multiple works presented by Albert Bandura (1977-2001). In their 2003 publication Bandura and Locke assert that:

Among the mechanisms of human agency, none is more central or pervasive than beliefs of personal efficacy. Whatever other factors serve as guides and motivators, they are rooted in the core belief that one has the power to produce the desired effects; otherwise one has little incentive to act or persevere in the face of difficulties, (p. 87).

The assertion as presented was included in the authors' comprehensive discussion of the causality of self-efficacy. The core notion that individuals must feel they have the power to produce desired outcomes serves as the central theme that encompasses the additional consideration of the degree to which belief in the meritocracy of education impacts an individual's selected behaviors such as the decision to commit and engage in the process of education. Therefore the conclusions provided by this study serve to contribute two varying elements to the present body of literature. The first conclusion confirms the degree to which academic efficacy serves as a

significant moderator of the decision to put forth academic effort contributes to the additive nature of social science research by affirming the previous assertions of Bandura and Locke (2003) adding to the population to which the general theoretical assertions can be applied. The second conclusion of this study is that:

2. The level of students' belief in the meritocracy of education as a proxy measure for the general merit students assign to education relative to desired post-secondary outcome expectancies is a significant moderator of student academic effort.

When related to the assertion of Bandura and Locke (2003) indicating that an individual must feel the power to attain desired outcomes as within their control, insertion of consideration of the belief in the meritocracy of education as an influencer of an individual's choice of actions presents a novel element. Belief in the meritocracy of education gives indication of an individual's belief that the system functions in correspondence with the merit of their choice of actions. The positive and significant relationship found to exist between students' belief in the meritocracy of the system and academic effort (or the degree to which their participation in the system maintains utility value in the pursuit of desired outcomes) aligns with the core notions presented by Bandura and Locke (2003) who provide a positive perspective on degree to which human agency moderates the negative impacts of factors considered to be outside an individual's control such as race, gender, and familial socioeconomic status.

The second conclusion of this study also affirms the findings presented in the qualitative study of MacLeod (1987). This presents a point of convergence between the

core assertions of Bandura and Locke (2003) and MacLeod (1987) as it relates to the degree to which individuals must feel outcomes are within their control in order to have the incentive to act. Whereas Bandura and Locke (2003) present a positive perspective on the degree to which agency moderates the impact of environment, MacLeod (1987) presents the degree to which feelings of powerlessness as a result of environment and disbelief in the system cause disengagement from the processes of education. The positive and significant linear relationship found between belief in meritocracy and academic effort affirms that the more one feels the system will serve as a utility for outcome attainment the more likely the individual is to contribute general effort to the tasks of education. The counter indication from this relationship is that the less merit one assigns to the system, the less likely one is to contribute effort, which affirms the discussion presented in MacLeod's (1987) qualitative study.

The point of divergence between Bandura and Locke (2003) and MacLeod's is the degree to which agency moderates environment. MacLeod (1987) presents the significant impact that environment and poverty have on aspirations indicating that aspirations greatly impact students' engagement in the schooling process. Bandura and Locke (2003) assert that humans are forward thinkers and thus efficacy beliefs have greater impact on goal setting than environmental context and personal factors of race and gender. The findings of this study relative to the directionality and magnitude of the relationships depicted between the selected control variables of race, gender, and socioeconomic status and academic effort affirm the latter assertions of Bandura and Locke (2003) thus presenting a positive perspective on the degree to which human

agency is a greater moderator of behavior and subsequent attainment than the personal and environmental factors considered in this study. Thus, the third conclusion of this study is:

3. There are weak and, for practical purposes, non-significant relationships between: race, gender, and socioeconomic status and students' level of acceptance of meritocracy, level of academic efficacy, and level of academic effort.

To expound upon the implications of this conclusion it is necessary to discuss both the directionality and the magnitude of the relationships found between the selected control variables and academic effort. The negligible impact of socioeconomic status on student academic effort counters the findings and implications of previous literature. A positive relationship would have indicated, as predicted by the prior studies reviewed in the overview of relevant literature that an increase in socioeconomic status corresponds with an increase in academic effort. However, the negligible impact of socioeconomic status on academic effort found in this study will later be discussed for further investigation and in the recommendations relative to the implication that elements of efficacy affect behavior more so than socioeconomic status. What is evident is that socioeconomic status and effort are not as strongly linked as previously posited.

Additionally, this study concludes that there are negligible relationships between race, gender, and effort. The conclusion that the relationships found between selected control variables and the targeted behavior of academic effort were weak and non-significant relative to practical implication counter the notions proposed by critical

theorists indicating that present pedagogies contribute to the disparities in academic achievement amongst differing populations of students according to race, gender, and socioeconomic status.

While discussion of the conclusions drawn from the findings of this analysis are not to discredit the importance of prior research in recognizing the role that race, gender, and socioeconomic status play in the systematic processes of education, the conclusions of this study do introduce the need to insert into the compilation of educational reforms recognition of: 1) the generally low levels of students' self-assessed academic effort; and 2) the greater influence of self-efficacy and students' level of acceptance of the meritocracy of education on student academic effort, with which race, gender, and socioeconomic status have very weak relationships. The conclusions available from this study are important as they contribute to the growing body of literature regarding the cognitive and environmental factors influencing academic effort in accordance with social cognitive theory (Bandura, 1989). The implications of this analysis lend themselves to further research founded in a critical view of educational theories that propose attainment of academic achievement without incorporating student academic effort and of theories of efficacy, meritocracy, and attainment that instead rely heavily on race, gender, and socioeconomic status as predictors of effort.

Recommendations

Previous waves of educational reform have led to initiatives to raise teacher quality, increase funding, revise curriculum, design relevant lessons to promote student engagement, and enhanced measures of accountability for academic achievement. However, these initiatives have marginalized the perspective that academic effort is necessary for increasing student achievement, particularly achievement beyond performance on standardized assessments. As noted in the literature grounding this study and affirmed by findings and conclusions of the analysis conducted, it is necessary for future reform movements to recognize that elements of human agency such as efficacy and belief in the merit of the educational system are greater moderators of student effort than previously posited personal factors of race, gender, and familial socioeconomic status and their corresponding sociocultural impact. The conclusions of this study lend themselves to the following recommendations:

1. To enhance the effectiveness of pedagogical reforms, educators should recognize the degree to which efficacy is a greater moderator of behavior than previously posited characteristics of race, gender, and familial socioeconomic status. Recognition of the significant role of efficacy should shift reform movements from a continued investment of fiscal and material resources, curriculum reforms, and lesson redesign as measures for eliciting greater levels of authentic student effort to practices promoted by Bandura (1982), Brophy (1998), Darling-Hammond (2010), Dweck (1986), Monk (2012), Parajes (1996), and Pintrich and Degroot (1990).

Practices promoted to enhance efficacy essentially run counter to those promoted by the stringent standards of the present academic accountability system which confines education to fulfilling the aim attainment of acquiring content knowledge rather than mastery of skills (Bowles & Gintis, 2002). The present system of accountability restricts students to a multitude of dichotomous pass-fail situations during their educational experience that have essentially been found to decrease both efficacy and effort (Covington & Berry, 1976).

2. There is a need for practitioners to recognize that despite years of reforms that have increased the efforts and burdens placed on teachers both through preparatory requirements for qualification and through pedagogical initiatives to design relevant and engaging lessons student academic effort has declined from that of previous generations (Bowles & Gintis, 2002; Babcock, 2011; Babcock & Marks, 2010). Despite the multitude of reforms that have onset since the focus on accountability in 1983, gains in academic achievement have been relatively negligible (United States Department of Education, 2008). As present reforms have emphasized the role of the teacher and the impacts of personal characteristics such as race, gender, and socioeconomic status, it might be beneficial for future reforms to take a new direction rather than perpetuate the areas of emphasis of past and present reforms.

For example, as noted by the U.S. Department of Education (2008) since the publication of *A Nation at Risk* in 1983, the United States in general has made significant gains and improvements in the areas of curriculum reform, standards and expectations, teacher quality, leadership and financial support. However, the

country has failed to grow in the area of time dedicated to academics during the school day and the school year. The United States spends fewer hours per week and has a shorter school year than many other industrialized countries (United States Department of Education, 2008, p. 6). Additionally, the study conducted by Babcock and Marks (2010) indicates that investment of time by students toward class and studying has decreased from what it was in 1961 to what it was in 2003. Because this study of time investment was specific to college students and this study is specific to tenth grade students, it will be discussed in the implications for further research that there is a need to investigate in the present context the levels of time and effort invested by secondary students in the present context. However, the reason for inclusion of this information at this point in the discussion of recommendations is to give indication that future reform movements in education should incorporate aspects such as requirements of time and effort on the part of students that has not previously been present in the reform initiatives of the recent past and present. This recommendation stems from both the research as presented and from the low mean and modal scores for the factor variable created to measure levels of academic effort for tenth grade students in this study.

3. The relatively low level of students' belief in the meritocracy of education grounds the recommendation for educators to devote more intentional energy toward promoting the utility value of education. This recommendation is multifaceted. First, there is a need to acknowledge that one of the primary utility values of education relative to economic attainment is the quantity of education received (United States

Bureau of Labor Statistics, 2013). Thus as affirmed by Hanushek, (2003) and the National Center for Educational Statistics (Decker, King Rice, Moore, & Rollefson, 1997) levels of educational attainment correspond with decreased levels of unemployment and increased levels of socioeconomic status. Yet, reforms in education and investment of fiscal resources in public education continue to maintain the limited aim of increasing general quality of education rather than quantity of education and thus have had little impact on levels of attainment for students. There is a general need for both educators and students to realize that a primary aspect of the utility of education resides in the quantity of education received.

Second, effort has greater utility value relative to attainment of employment than does mastery of content knowledge (Bowles & Gintis, 2002). Therefore, the expectations of schooling need to be reassessed as current reforms to increase accountability for content coverage have created an oversight of fundamental necessity of effort to succeed both academically and as a desired trait of future employers (Bowles & Gintis, 2002; Tomlinson & Cross, 1991).

Present reforms have narrowed the emphasis of the relevance of education down to the acute level of individual lesson elements and aspects of lesson design. Teachers are inundated with the need to insert “real world relevance” into each lesson in order to make the lesson engaging. However, what is left out of the equation for effective instructional pedagogy is the need to make students aware of the general relevance of education to post secondary attainment and the general

utility value of the ability to assert sustained effort. Additionally, students should be made aware of the merit awarded for the quantity of years of education completed and levels of degrees attained independent from the relative value of content knowledge acquired during those years of education.

Thus, the recommendation is that in order to raise the level of belief in the meritocracy of education, educators need to begin to make students aware of the relevance and utility value of education in terms of quantity of education and ability to sustain effort rather than claiming utility value through means of content knowledge that will likely be irrelevant by the time students enter the workforce (William, 2013). This notion is also depicted in the 2012 My Voice study conducted by the Quaglia Institute (2013) and the Pearson Foundation, which reveals that while most students want to do well in school, less than half see the relevance of what they are learning in their classes. Continued emphasis on the relevance of the specific content knowledge being taught in isolated lessons will most likely sustain the low levels in students' belief in the merit of education.

Implications for Further Study

1. The directionality of some of the relationships found to exist between the selected control variables and the factor variables of academic efficacy, belief in the meritocracy of education, and academic effort warrant further investigation possibly through a mode that more greatly situates the research

design within the context of the subjects being investigated. The mode of analysis employed in this study and the nature of quantitative research with relative detachment from specific contexts presented the following relationships that counter those predicted in the literature grounding this study:

- the positive correlation found between being Hispanic and academic effort;
 - the positive correlation found between being African American and academic efficacy, belief in the meritocracy of education, and academic effort;
 - the positive correlations found between being female and belief in the meritocracy of education and academic effort;
 - the negative correlation found between being female and academic efficacy.
2. The negligible-to-weak relationships depicted between the selected control variables of race, gender, and socioeconomic status and the factor variables generated for academic efficacy, belief in the meritocracy of education, and academic effort warrant further investigation. Prior research ascribes greater significance to the impact of the personal characteristics of race, gender, and socioeconomic status than were found to exist through this analysis.
 3. The relatively low levels of academic efficacy, belief in the meritocracy of education, and academic effort depicted by tenth grade students' responses to

items on the ELS:2002-2004 survey ground the need for further research into each of these areas. As noted previously, one of the limitations of quantitative research is the degree to which the mode of data collection strips specific responses from the potential meanings ascribed by the respondents. Thus, conducting a qualitative study on students' levels of academic efficacy and belief in the meritocracy of education may allow more insight into the degree to which each affects students' academic effort and may provide additional insight into relative levels of academic effort as well.

4. Introduction of belief in the meritocracy of the system as a measure of the utility value assigned to the process of education relative to post-secondary aspirations and the degree to which individuals' perceive the system as sustaining their power to affect desired outcomes by awarding merit to their actions of participation within the system warrants further research specific to the purposes of: 1) investigating the extent to which belief in the meritocracy of education affects student behavior, and 2) developing and determining the most appropriate mode for measuring individuals' belief in the meritocracy of the system inclusive of perceived utility value relative to aspirations and control beliefs relative to the perceived fairness of the system when accounting for person-environment factors of race, gender, and socioeconomic status.

Summary of the Study

This study has satisfied the aim of the determining the degree to which academic efficacy and belief in the meritocracy of the educational system influence students' choice to exert or withhold authentic effort toward the general process of education by finding that the combined impact of academic efficacy and belief in meritocracy of the system accounts for approximately 60 percent of the variance observed in academic effort when controlling for race, gender, socioeconomic status, and the interaction between efficacy and belief in meritocracy of education. The negligible relationships found between race, gender, socioeconomic status, and academic effort corresponds with Bandura and Locke's (2003) assertion that efficacy is a greater moderator of human behavior than the aforementioned personal characteristics. The relatively low levels of academic effort and the magnitude and directionality of the relationships found between the control variables, other independent variables, and academic effort warrant further investigation. The finding that belief in the meritocracy of the system has an impact on academic effort equivalent to that of academic efficacy holds significant implications for the need to insert this new knowledge into future reforms of educational pedagogy and policy.

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APPENDIX A

OVERVIEW OF THE EDUCATION LONGITUDINAL STUDY OF 2002

(ELS:2002-2004)

RETRIEVED FROM

<http://nces.ed.gov/surveys/els2002/>



Education Longitudinal Study of 2002 (ELS:2002)

Overview: Purpose

The Education Longitudinal Study of 2002 (ELS:2002) is designed to monitor the transition of a national sample of young people as they progress from tenth grade through high school and on to postsecondary education and/or the world of work.

ELS:2002 has two distinctive features:

- First, it is a longitudinal study, which means that the same individuals are surveyed repeatedly over time.
- Second, it is a multilevel study, which means that information is collected from multiple respondent populations that represent students, their parents, their teachers, their librarians, and their schools.

As a longitudinal study, ELS: 2002 follows a nationally representative cohort of students from the time they were high school sophomores through the rest of their high school careers. In 2004, the sample was augmented to make it representative of seniors as well. ELS:2002 continues to follow these students into postsecondary education and/or the labor market. These transitions are complex in that youth may follow many different pathways and prolonged in that the students will be followed until they are in their mid-to-late twenties. By surveying the same young people over time, it is possible to record the changes taking place in their lives and help to explain these changes—that is, understand the ways in which earlier achievements, aspirations and experience influence what happens to them later.

In the first year of data collection (the 2002 base year) ELS:2002 measured students' tested achievement and obtained information about their attitudes and experiences. These same students were surveyed and tested again, two years later in 2004 to measure their achievement gains in mathematics, as well as changes in their status, such as transfer to another high school, early completion of high school, or leaving high school before graduation. In the third round of data collection in 2006, information was collected about colleges applied to and aid offers received, enrollment in postsecondary education, employment and earnings, and living situation, including family formation. In addition, high school completion status was updated for those who had not completed as of the third round of data collection. Cohort members will be interviewed again in 2012 so that later outcomes, such as their persistence and attainment in higher education, or their transition into the labor market, can be understood in terms of their earlier aspirations, achievement, and high school experiences.

As a study with many phases and components, ELS:2002 gathers information at multiple levels. Information has been obtained not just from students and their school

records, but also from their parents, teachers, and administrators of their high school, including the principal and library media center director. The data collected from their teachers provides direct information about the student as well as the credentials and educational background information of the teacher. This multilevel focus supplies researchers with a comprehensive picture of the home, school, and community environments and their influences on the student.

Using this longitudinal, multilevel information, the base year (2002) and first follow-up (2004) of ELS:2002 help researchers and policy makers to explore and better understand such issues as the importance of home background and parental aspirations for their child's success; the influence of different course-taking paths; the effectiveness of different high schools, and whether their effectiveness varies with their size, organization, climate or ethos, curriculum, academic press, or other characteristics.

After the high school years, ELS:2002 continues to follow its sample of students into postsecondary education and the labor market. The second follow-up (2006) provides data that can be used to examine the access of high school students to postsecondary institutions, their choices of enrollment and college major, some aspects of their college experience, and by the time of the third follow-up, which is planned for 2012, their postsecondary persistence, attainment, and eventual entry into the labor market. For those who go directly into the work force from high school, whether as dropouts or high school graduates, ELS:2002 can be used to examine how well their high school experience prepared them to succeed in the labor market. Some questions are also asked of all sample members about their volunteer service, service in the military, family formation, and other aspects of adult life.

ELS:2002 is conducted on behalf of the National Center for Education Statistics (NCES) of the United States Department of Education by the Research Triangle Institute (RTI)—a not-for-profit university-affiliated research organization with headquarters in North Carolina.

Survey Design and Sample Sizes

Key features of the ELS:2002 design are listed below, along with base year (2002) sample sizes:

Base Year (2002)—Data Released in April 2004

- Baseline survey of high school sophomores, in spring term, 2002.
- Cognitive tests administered in reading and mathematics.
- Questionnaires administered to parents, math and English teachers, school principals, and heads of the school library media center.
- Sample sizes:
 - 750 schools (questionnaires: principals, head librarians or media center directors; facilities checklists completed by survey administrators).
 - Over 15,000 students and their parents.
 - Mathematics and English teachers—one each for each student.

- Schools selected first, then tenth-grade students selected randomly within each school.
- Non-public schools (specifically, Catholic and other private schools) sampled at a higher rate, ensuring that sample is large enough to support comparisons with public schools.
- Asian students sampled at a higher rate than White, Black, and Hispanic students, ensuring that the sample is large enough to support comparisons with those groups.

APPENDIX B

EDUCATION LONGITUDINAL STUDY OF 2002

STUDENT QUESTIONNAIRE

REPLICATED FROM THE ORIGINAL QUESTIONNAIRE

ACCESSIBLE AT

<http://nces.ed.gov/surveys/els2002/questionnaires.asp>

EDUCATION LONGITUDINAL STUDY OF 2002



STUDENT QUESTIONNAIRE

Base Year 10th Grade

Sponsored by:

U.S. Department of Education National Center for Education
Statistics

Conducted by: RTI

USES OF THE DATA

The data from this survey will be used by educators and by federal and state policy makers to address important issues facing the nation's schools: educational standards, high school course-taking patterns, dropping out of school, the education of the disadvantaged, the needs of language minority students, and the features of effective schools.

ASSURANCE OF CONFIDENTIALITY

The collection of information in this survey is authorized by Public Law 100-297 and continued under the auspices of Section 404(a) of the National Education Statistics Act of 1994, Title IV of the Improving America's Schools Act of 1994, Public Law 103-382. Participation is voluntary. You may skip questions you do not wish to answer; however, we hope that you will answer as many questions as you can. The information you provide will be kept confidential, and will be protected to the fullest extent allowable under law. Information will be protected from disclosure by federal statute (20 USC

9003a-9007, as amended). Data will be combined to produce statistical reports. No individual data that links your name, address, telephone number, or identification number with your responses will be reported.

34858

89. How often do these things apply to you?

(MARK ONE RESPONSE FOR EACH LINE)

| | Almost never | Some- times | Often | Almost always |
|---|-------------------------|------------------------|-----------------------|--------------------------|
| a. I'm confident that I can do an excellent job on my math tests | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| b. I'm certain I can understand the most difficult material present in math texts | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| c. I'm certain I can understand the most difficult material presented in English texts | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| d. I study to get a good job | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| e. When I sit myself down to learn something really hard, I can learn it | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| f. I'm confident I can understand the most complex material presented by my English teacher | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| g. When I study, I make sure that I remember the most important things | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| h. I study to increase my job opportunities | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| i. I'm confident I can do an excellent job on my English assignment | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| j. When studying, I try to work as hard as possible | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| k. I'm confident I can do an excellent job on my English tests | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| l. I'm confident I can understand the most complex material presented by my math teacher | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| m. I'm certain I can master the skills being taught in my English class | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| n. If I decide not to get any bad grades, I can really do it | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| o. When studying, I keep working even if the material is difficult | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| p. I study to ensure that my future will be financially secure | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| q. If I decide not to get any problems wrong, I | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

| | | | | | |
|----|---|-----------------------|-----------------------|-----------------------|-----------------------|
| | can really do it | | | | |
| r. | I'm confident I can do an excellent job on my math assignments | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| s. | When studying, I try to do my best to acquire the knowledge and skills taught | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| t. | If I want to learn something well, I can | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| u. | I'm certain I can master the skills being taught in my math class | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| v. | When studying, I put forth my best effort | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
